

Hulsen Speech

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PROCEEDINGS OF THE 35th ANNUAL MEETING OF THE SOCIETY OF AMERICAN FORESTERS

ANSLEY HOTEL, ATLANTA, GEORGIA.

JANUARY 27-28-29, 1936

FOREWORD

SINCE this issue of the JOURNAL is devoted exclusively to the Proceedings of the Thirty-Fifth Annual Meeting of the Society, a foreword replaces the customary editorial.

Those who attended the meeting seem generally agreed that it broke the record, not only in size but also in interest and significance. Of its holding first place in size there can be no question. The total registration was 470, as against a previous high of 335. Since some did not register, the actual attendance is believed to have been close to 500. This large attendance was in itself a big surprise.

No less surprising, at least to the present writer, was the wide geographical representation. The meeting was no local, sectional, or regional affair, but truly national in character and make-up. The sections nearest by turned out splendidly, but continental distances proved no barrier to a fine showing of members from the Northeast, the Lake region, and the far West. If these members came South with the idea of getting warm, the weather man saw to it that they should after all feel reasonably at home.

As for interest, that too is attested by very concrete evidence. Others than those who attended the meeting can judge whether the record for interest was broken. The Proceedings present the evidence. It is pointed to with pride—pride in the Society, for the activities which it conducts as a professional body, and for its ability to focus its attention so squarely on outstanding current problems of forestry and public forest policy in the United States, and to make the discussion of these problems so well worth while.

The open discussions that followed the prepared papers not merely evidenced the interest of the audiences in the successive sessions—an interest demonstrated also by the large number in attendance, hour after hour through each day—but constantly brought out fresh points of view and more to think about. Often the discussions were the most interesting and perhaps the most valuable parts of the sessions. They made it impressively plain that the profession has passed beyond the juvenile period—that foresters have grown up, think for themselves, look to no central authority for ready-made conclusions, are yes-men to no leader, however re-

spected or professionally distinguished. But a wholesome diversity of thinking is more than an evidence of intellectual maturity, vigor, and individual interest. It is a *sine qua non* for the fulfillment of one of the most important obligations and functions of the profession—the obligation and function of free and searching criticism.

No organization, no public authority, no leader can afford in the long run to do without criticism. Wise leaders know this, and encourage constructive criticism from within their own organization as well as welcome it from without. No previous Chief of the federal Forest Service—necessarily the outstanding titular leader in the framing and guidance of national policies of forestry—has so convincingly encouraged the free flow of honest criticism within the Forest Service as has its present Chief. But it is in the very nature of good organization that, once criticisms have been brought forward and weighed, and the question involved has been settled, associates and subordinates must in loyalty accept the decision of those upon whom rests the responsibility to decide. Thereafter all must cooperate unitedly in pursuing the prescribed course. For the profession, the case is otherwise; and therein is presented a unique field of public service.

This service, however, can reach its full usefulness only if undertaken in the right spirit. Professional discussion and the process of reaching conclusions must proceed with clear recognition of a common standing-ground and a common orientation. The common standing-ground is furnished by the subject-matter of forestry—our peculiar professional field. The common orientation is our allegiance to the public welfare as the supreme consideration. Within our field, we must as foresters work together with a single aim with mutual respect for the motivations of the other fellow when we see things differently, but always striving to bring out what is going to be in the best public interest, through professional discussion of whatever seems to invite fair criticism.

Conspicuously, this was the prevailing spirit of the proceedings at the Atlanta meeting; and that chiefly gave the meeting its significance. The Society is in process of developing a highly important function of professional scrutiny of public policies and performance. It is believed that what was brought out in the course of the sessions is of sufficient interest to justify making it available in reprints, for those who may wish to put in orders. How this may be done is indicated elsewhere in this issue.¹ To assure reprints, prompt action in ordering is essential.

¹See last page of this issue.

MONDAY MORNING SESSION, JANUARY 27, 1936

SUBJECT: TRENDS AND REQUIREMENTS FOR NEWSPRINT PAPER FROM SOUTHERN WOODS

Chairman: C. P. Winslow

RESIDENT CHAPMAN called the meeting to order and turned the chair over to Mr. C. P. Winslow, Director of the Forest Products Laboratory, Madison, Wis., as presiding officer of the first session. The following papers were then presented:

THE PART THE SOUTH MAY PLAY IN MEETING NATIONAL NEWSPRINT REQUIREMENTS

By C. EDWARD BEHRE

Northeastern Forest Experiment Station

IN opening this symposium on newsprint possibilities in the South it is my function to present essential background information concerning the pulp and paper situation for the country as a whole, with especial reference to the production of newsprint in the South. I have been called on for this contribution not as an authority on the newsprint industry, nor yet as one intimately acquainted with the forests of the South, but simply because I have recently had occasion to analyze national pulp and paper requirements in relation to forest conservation, in preparation of the Hale Report.

It is first necessary to consider how much newsprint paper is consumed each year in this country, and how large future newsprint requirements are likely to be.

Prior to the depression newsprint consumption increased steadily, reaching a peak of 3,813,000 tons in 1929. After a drop to 2,711,000 tons in 1933, there is every reason to believe the upward trend has again established itself—the amount in 1935 was 3,279,000 tons. Newsprint has accounted for from 25 to 30

per cent of the total consumption of all kinds of papers.

In arriving at an estimate of future requirements, the significance of past trends in paper use may well be emphasized by calling attention to the remarkable increase in per capita consumption which has been maintained for over 100 years. If this trend should be resumed, staggering totals would be reached in a very few decades, even though population is rapidly approaching stabilization. But there are indications that saturation is being approached in many grades of paper, including newsprint. All factors considered, the estimate made by Boyce in 1931, placing prospective annual newsprint requirements at 5 million tons, seems entirely reasonable. The manufacture of this prospective requirement would take about 3,985,000 tons of mechanical and 1,310,000 tons of sulphite pulp, with an equivalent volume of about 6,600,000 cords of pulpwood. This compares with 25,000,000 cords as the total requirement for all kinds of pulpwood which has been set up as a basis for national planning.

The second matter of interest is how

present requirements are being filled. The record shows that while consumption mounted, domestic production first held its own, then declined. Domestic production has not shared in the recent upturn in consumption, so that at present more than 70 per cent of our newsprint is imported, chiefly from Canada. If the situation is considered on the basis of pulpwood equivalent, an even larger proportion is being imported, because a certain part of the imported wood pulp and probably also of imported pulpwood is used for the manufacture of newsprint paper in American mills. The proportion of newsprint imported increased very rapidly during the decade prior to 1929, due largely to the opening of many new mills in Canada.

It is of interest to view the situation with respect to imports of all kinds of pulp and paper in terms of pulpwood.

It will be seen that more than half of all pulp and paper requirements is obtained from foreign sources.

The primary cause of the Nation's dependence on foreign sources of supply is the reliance of the industry upon spruce pulpwood. Spruce is so peculiarly suitable for pulping, particularly for major tonnages of sulphite and groundwood pulps and newsprint paper, that industry has tended to locate where spruce could be obtained. The relatively pure stands of spruce in the Northeast, fortunately near the large markets and adjacent to

cheap water power, influenced early establishment of mills there. As the wood supply diminished, increasing use was made of wood imported across the nearby Canadian line. Stimulated by the removal of the American tariff on newsprint paper and pulp in 1913 and by the threat of a Canadian embargo on pulpwood, a transfer of some mills and a large development of new production, principally newsprint, in eastern Canada has been predicted largely on cheap and plentiful supplies of spruce pulpwood and of low-cost power.

Exclusive need for spruce for mechanical and sulphite pulps has greatly diminished as a result of technical developments. Balsam fir in the East and other true firs and hemlock in the West are now used in place of spruce with little discrimination, while many hardwoods are similarly used on a limited scale. The ability to use western hemlock has opened the way for extensive development of the pulp and paper industry on the Pacific Coast and in Alaska. Research developments point clearly to the extension of the mechanical and sulphite processes to other important native species, notably the southern yellow pines, and to the possibility of a wider use of hardwoods.

Furthermore, pulps manufactured by the sulphate process are rapidly increasing in importance and are being adapted to many purposes formerly supplied only by sulphite pulp. Since sulphate pulp

TABLE 1
ORIGIN OF PULP AND PAPER CONSUMPTION OF THE UNITED STATES IN TERMS OF PULPWOOD
(Thousands of cords)

	1923	1926	1929	1932	1933
Paper imports	1,827	2,485	3,174	2,278	2,288
Wood pulp imports	2,413	3,090	3,377	2,270	3,451
Pulpwood imports	1,236	1,277	1,249	742	724
Total imports	5,476	6,852	7,800	5,290	6,462
Domestic pulpwood consumption	4,637	5,489	6,397	4,890	5,838
Total pulpwood requirements	10,113	12,341	14,197	10,180	12,301
Percentage of total requirements from foreign sources	54	56	55	52	53

can be made from almost any coniferous species, this indicates a further movement away from the dominance of spruce-fir-hemlock.

The distribution of the domestic newsprint industry among the principal pulp producing regions at present may be indicated by 1934 mill capacities as listed in Lockwood's directory, converted to annual pulpwood equivalents.

	Cords
New England	951,000
Middle Atlantic	268,000
Lake	388,000
Central	65,000
Pacific Coast	468,000
Total	2,140,000

In the Hale Report an attempt was made to work out a possible distribution of future pulp production among the various forest regions, not in any sense as a forecast or prediction, but simply to illustrate the balance which might obtain should the prospective requirements of 25 million cords a year be supplied without dependence on imports. Table 2 presents the results.

In allocating the possible future production among the various regions, it was assumed that persistent effort for self-preservation by existing mills would require production at least equal to installed capacity in each process in each region if this could be supported by the forests of the region. Beyond the limits of existing mill capacity, prospective production was distributed with due regard for relative accessibility, quantity of standing timber, current and theoretical future annual growth of pulpwood species, suitability of species available in each region for the various processes, and total of consumption for all purposes.

Comparison of the allocation of possible future newsprint production to the four northern regions with existing newsprint mill capacities indicates that, although the present machines may perhaps be maintained, the forests offer little prospect of supporting any increased production. In New England, prior to the depression, cut for all purposes and destruction averaged $2\frac{1}{2}$ times the estimated current growth, causing a rapid depletion of available growing stocks and making it increasingly difficult for existing mills to

TABLE 2

POSSIBLE CONTRIBUTION OF FOREST REGIONS TO PROSPECTIVE PULPWOOD REQUIREMENTS, BY PROCESSES OF PULP MANUFACTURE
(Thousand Cords)

		processes				For sulphate process	For soda and semi-chemical processes
		For mechanical and sulphite		For other processes			
		Total	For news-print paper	Softwood	Hardwood		
Region	Total	Total	For news-print paper	Softwood	Hardwood	For sulphate process	For soda and semi-chemical processes
New England.....	3,250	2,600	1,000	400	1,200	150	500
Middle Atlantic.....	1,500	1,200	200	200	800	50	250
Lake	3,200	2,200	400	800	1,000	600	400
Central	500	500	—	—	500	—	—
South	7,500	4,000	2,000	1,000	1,000	3,200	300
Pacific Coast.....	7,050	6,000	2,000	4,000	—	1,000	50
Northern Rocky Mountain.....	250	250	150	100	—	—	—
South Rocky Mountain.....	250	250	100	150	—	—	—
Alaska	1,500	1,500	750	750	—	—	—
Total	25,000	18,500	6,600	7,400	4,500	5,000	1,500

survive without dependence on imports. Since existing newsprint mill capacity in this region could by itself absorb the entire current growth, it is evident that the indicated production of a million cords a year could only be maintained if forest management is successful in substantially increasing the supply. Curtailed production during the depression has perhaps permitted some recuperation of the growing stock, but prevailing low prices and high taxes discourage systematic planning for sustained yield.

In the Middle Atlantic region the situation is even more acute, and future newsprint production will doubtless be forced considerably below present manufacturing capacity. It is not believed that any newsprint production can be expected from the Central states.

For the Lake states, a future production approximately equal to the present newsprint mill capacity is suggested. Although this production may be largely confined to Minnesota, it can be maintained under proper forest management, especially as the cut of hemlock for lumber and other purposes than pulp is likely to be drastically curtailed in the near future.

Development of the newsprint industry in the Pacific region, although already on a scale commensurate with most of the eastern regions, is believed to be capable of much greater expansion. In view of the raw materials available there, a prospective annual contribution of 2 million cords of pulpwood for newsprint seems entirely reasonable.

The supply of hemlock, spruce, and true firs in the Pacific region reaches the enormous total of 431 million cords. Spruce and hemlock are very widely used for lumber, and it is to be expected that under normal conditions lumber production from these species will continue to exceed pulp production many times over for a long while in the future. But sawmill waste has already been used exten-

sively for pulp in the Pacific Coast mills and the proportion of the total cut so used has increased as lumber prices have declined. Furthermore, under the conditions of commercial logging in the forests of this region, tremendous quantities of waste material are left in the woods. Much of this is well suited for use as pulp. Its utilization would not only provide raw material for pulp mills at low cost but would greatly reduce the fire hazard on cut-over areas. In this region as in no other, because of the large size of the timber, the large amount of material which cannot be economically utilized for lumber, and the existence of an established and active log market, the possibilities of integrating the pulp and lumber industries are tremendous. While current growth of species suitable for newsprint in the Northwest is at present only $1\frac{1}{2}$ million cords a year, the immense stands of virgin timber still remaining and the possibilities of largely increased growth under effective policies of forest management give every indication that major newsprint developments may be maintained indefinitely in that region.

Pulpwood possibilities in Alaska are somewhat similar to those in the Pacific Coast states. The forests of southeastern Alaska appear to offer better prospects for development of the newsprint industry than for other branches of the paper industry or for lumber. The immense stand of spruce and hemlock timber suitable for newsprint pulp is in large part readily accessible to tidewater. Abundant water power is also awaiting development. Production may proceed whenever economic conditions are favorable, and when once started may readily reach a total of 750,000 cords for newsprint annually, since it is estimated that the Alaskan forests could produce under forest management at least $1\frac{1}{2}$ million cords per year in perpetuity.

In the Rocky Mountain region there also exist large quantities of timber suitable for newsprint, exploitation of which has not yet been undertaken. Conditions for development are not so favorable as elsewhere because the region is relatively inaccessible to large markets and because the forests occur generally at rather high elevations in the mountains, and are not concentrated in compact, continuous blocks. Nevertheless, should the Nation seek self-sufficiency in respect to paper and pulp, it should be possible to provide at least 250,000 cords of newsprint production from the two Rocky Mountain regions.

Finally, the South holds possibilities for an expansion of the domestic newsprint industry several times more than sufficient to make up the balance of 2 million cords to satisfy prospective national requirements. Up to the present no newsprint mills have been established in the South, but the technique of conversion has been carried far enough to indicate the possibility of eventual, if not early, developments. The outstanding favorable factors in the southern situation are the extremely rapid growth which is occurring in the second-growth timber and the large areas of highly productive forest land, easily accessible for logging and located reasonably close to the principal markets of the country.

In presenting statistics on the possibilities of newsprint production in the South in the Hale Report, only one-fourth of the stand and one-third of the current growth of southern yellow pine were included. At the time this Report was compiled no data were at hand on the actual percentage of heart-free material in second-growth timber.

But even on the extremely conservative basis used in the Hale Report, current growth of timber suitable for newsprint in the South totaled over 11 million cords a year. Obviously when it is considered

that present growth is far below ultimate possibilities of the region, the South is in a position to supply as much of the 6,600,000 cords estimated as total prospective future newsprint requirements as might not be more advantageously produced from the spruce-fir and hemlock forests of the North and West.

But, in my opinion, possible development of the newsprint industry in the South must be considered in relation to the production of pulp for other uses and in relation to the production of lumber and other forest products as well. Southern pine timber is admirably suited for sulphate pulp production, and sulphate pulp is not only being consumed in constantly increasing quantities for kraft paper, boards, and other well established uses, but is entering many fields formerly supplied only by sulphite pulps. From an economic standpoint the prospect for future expansion of sulphate pulp production in the South is perhaps brighter than for newsprint manufacture, first, because of the pressure on our markets of potential production from existing newsprint mills in Canada, many of which, as a result of reorganization of capital structure, will now be operating with plant investment written down to a very nominal figure; and second, because of similar pressure in respect to sulphite pulp from northern European countries whose economic existence is predicated very largely on ability to export the pulp and paper products of their spruce forests. But European competition presents a serious problem for sulphate pulp production as well as for sulphite.

How the possible future allocation of pulp production in all classes compares with existing pulp mill capacities is brought out in the Hale Report. If this country were to attain self-sufficiency in the production of a possible future requirement of 25 million cords on the basis outlined in the Hale Report, the

South might account for nearly one-third of the total, which would mean increasing its production to more than three times present capacity. In such a development it is logical to expect that the South would produce more than 60 per cent of all the sulphate pulp. It is worth noting also that it is considered reasonable that mechanical and sulphite pulp production for all purposes might be double the amount used for newsprint paper.

But going beyond the possible requirements for pulp and paper, the South must not lose sight of the opportunity it has to maintain a dominant position in lumber production. The rapid growth, which is featured so much in discussions of potential newsprint production, is even more an asset in producing timber for sawlogs, especially for structural timber and for sizes to yield high quality products. There is no basis for doubting that the amount of timber used for lumber will continue to be far larger than the amount required for any other form of utilization. If we accept the figures of the Copeland Report as a reasonable picture of prospective requirements and growth possibilities, production of 25 million cords of pulpwood would constitute less than 20 per cent of the total theoretical growth of species suitable for pulp. The South is capable of yielding more than half of the country's total growth in such species, but the proportion going into pulp is likely to be less than for the country as a whole because this section is so favorably situated to produce the bulk of the Nation's sawtimber. The dominance of the South, both in current growth and in theoretical future production, is pronounced. Current growth in the South is more than half of the total for the Nation, and the South is the only section aside from the Lake states which is expected to yield substantially more in the future than at present.

But if the South is to maintain the

dominant position suggested by these figures, it is essential that new developments for paper manufacture be based on sustained yield forest management. The stand of timber of species suitable for pulp in the South, according to the best estimates available today, is less than half the merchantable growing stock which would be required to support the theoretical yield for all purposes suggested in the previous figure. In this respect, the South is relatively in little better position than the Lake states or Central regions. However, reproduction conditions in the current cycle are more favorable in the South, and with a reasonable degree of planning an approach toward a more adequate growing stock should be relatively easy to accomplish.

I am concerned, however, lest the South, after having felt the blighting effects of forest depletion with the exhaustion of the original stands of virgin timber, be now intoxicated by the realization of a substantial volume of second growth and proceed to exploit it without consideration for the future. Clear cutting of the second growth timber as soon as it reaches a minimum merchantable size can only lead to disaster. No matter how many cords per acre per year the land is capable of producing, the growth will be of little value unless it is realized on stems of merchantable size; and a saw-timber industry cannot be maintained if all the trees are cut when they reach pulpwood size. The growing stock of 2,400 million cords estimated as necessary to permit the South to attain a sustained yield of pulpwood species of the magnitude suggested for it in the Copeland Report is equivalent to an average stand of 12 cords per acre on every single one of the entire 200 million acres of forestland in the region. Is there any indication that such a condition is likely to be attained without widespread planning and restraint in exploitation of the young

stands? Not until such an amount is visible may it be safely claimed that the South has a surplus of standing timber.

I believe the South may well turn to the Northeast for an object lesson in the present situation. Over a large part of the Northeast successive waves of unrestricted cutting have reduced the forest growing stock to a point where many of the substantial wood using industries have long since moved to other regions, where those that remain have difficulty in finding sufficient amounts of suitable timber, and where the land owner has little outlet for his timber except to the irresponsible and inefficient portable mills which contribute little to community stability.

In the northern part of the region pulp production has supplanted the lumber industry almost altogether, and in southern New England, aside from a small production of railroad ties by portable mills, the output of the forest has been reduced to fuelwood and fence posts. The drastic decline of the forest industries has been coincident with a large increase in the area available for forestry, and is in no sense a result of either land settlement or actual denudation of the forest. It is essentially the result of depletion of growing stocks.

As I see it, the only sound course for the South is to work through a system of light cuttings in the second growth for sustained yield management in which the production of pulpwood will be integrated with the growing of high quality sawtimber. There is ample evidence to support the contention that the average annual

yield of pulpwood and other small sized material will be fully as great when a growing stock suitable for large sized sawtimber is maintained as when the management aims solely for a pulpwood crop. It is not within my topic to expand on the many advantages, both economic and social, which I believe will result from an integration of utilization such as I have suggested. But in conclusion, I wish to emphasize that although possibilities for newsprint production in the South are indeed large, pulpwood should remain a minor part of southern forest production. If it assumes major importance, in point of volume of timber used, it will be at the expense of other forest industries and will imply a drastic reduction of the aggregate industrial activity in the South.

And finally, although this morning's program is oriented from the point of view of the physical factors affecting southern newsprint production, I believe that actual development is essentially an economic rather than a technical problem. Assuming that manufacturing techniques have already been sufficiently mastered, construction of new mills is being held back chiefly by unfavorable economic conditions affecting the entire paper industry in this country. The problems of sustained yield, husbanding of growing stocks, and integration of utilization will come to the fore and demand increasing attention after the economic situation has cleared. As foresters we should be establishing the basis for successful solution now.

PULPWOOD QUALITY OF SOUTHERN PINE AS RELATED TO THE REQUIREMENTS OF NEWSPRINT PRODUCTION

By C. E. CURRAN

Forest Products Laboratory, U. S. Forest Service

IF a commercially acceptable newsprint is to be manufactured from the southern pines, it obviously must compare favorably in quality with the product already available; it must be sold at a price to compete in the current market; it should be produced at a cost low enough to meet even lower prices and stern competition. There is no tariff on newsprint paper, and none seems probable. Quality and price are the only available means of gaining a "place in the sun."

So-called standard newsprint possesses certain attributes of color, opacity, finish, cleanliness, uniformity of formation, strength in tear, burst, tensile and fold, stiffness, and ability to take ink. Many of these characteristics are possessed in a higher degree by present day newsprint papers than is perhaps actually necessary in their use, but the trade is accustomed to these properties and demands them. Of the several qualities mentioned, color, opacity, finish, formation, and ink-taking ability probably rank first. Strength, although much stressed, is of secondary importance. The reader prefers a stiff sheet which will not flop as he holds it in one hand and hangs onto a bus strap with the other. The pressman wants a sheet which will print rapidly and clearly, which will not break as it runs through his high speed presses, nor crack as it is folded. Once these objectives are met, his interest in strength is satisfied.

Nearly all the qualities mentioned are derived from the fibers making up the sheet of paper. Other components in the pulp mixture, or "furnish," affect them to some degree. Dyestuffs are added to improve color; fine clay is used to im-

prove finish; rosin size is used to improve moisture resistance; but fiber characteristics are by far the most important factors.

At the present time practically all newsprint is made by combining pulps manufactured by two processes—groundwood and sulphite. However, there are exceptions. One Canadian company several years ago produced a newsprint paper from groundwood and a semibleached spruce sulphate pulp. The American Newspaper Publishers Association has contended that any paper upon which newspapers are printed is newsprint and should be imported duty free, if intended for newsprint use. Thus any paper, regardless of composition, might be ruled as newsprint. The U. S. Treasury Department has made certain rulings that defined standard newsprint, but they do not have the force of law and are subject to change. At the present time standard newsprint is made up of about 80 per cent groundwood pulp and 20 per cent sulphite pulp. However, these proportions vary widely. Some sheets contain as little as 60 per cent groundwood; others contain up to 95 per cent. Groundwood is cheaper than sulphite, so that the more that can be used, the better looking the balance sheet.

It has long been stated that the sulphite pulp is added for purposes of strength. This is only partly true, and in some cases not true at all. Sulphite, or any chemical fiber, imparts certain characteristics of flowability or freeness to a pulp stock, which facilitate its formation into paper at high speeds and which lend certain properties of finish and "feel" that have come to be required in newsprint paper. These properties are frequently

of more significance than any consideration of strength. The addition of any fiber that will impart such properties, or the preparation of a groundwood that does not require the addition of other fiber to develop them, is really the only criterion for newsprint. Results are what count.

Assuming that the development of a southern pine newsprint industry will proceed along the beaten track and that the sulphite and groundwood processes will be employed, what qualities in pulpwood will be required? This question can probably best be answered by considering the properties which the finished paper must possess in relation to the two types of pulps.

Since groundwood predominates in newsprint, it is essential that it be of a good bright color. To be sure, groundwood can be bleached, but bleaching is costly. Therefore, a clean bright wood should be employed. Dark colored heart is a disadvantage. Heartwood, of itself, does not militate against use of a pulpwood in grinding, but a dark colored wood of any kind seriously impairs groundwood color quality. The same considerations apply to stained wood. Blue stain in limited amount is no bar to pulping, but over 15 per cent blue stain effectively reduces color, in either sulphite or groundwood pulp, and lowers the value of the pulp for newsprint purposes.

Considering sulphite pulp, good color is also required. Sulphite is not bleached for newsprint uses, and the unbleached color is directly proportional to the color of the original wood. Furthermore, the sulphite process will not reduce pine heartwood. Why, we do not know. If ordinary lime base cooking liquor is used, practically no reduction seems to occur. The heartwood is left as a dark colored, hard mass of no pulp value. This can, of course, be screened from the good pulp, refined, and used for board or

wrapper, but screening is expensive. If a soda base sulphite liquor is employed, some reduction of heartwood is accomplished, but not sufficient to remove entirely the objections noted for lime base liquors. The best solution of the problem seems to be a selection of heart-free pine, which pulps excellently by the sulphite method.

Opacity, formation, and finish are largely due to fiber characteristics. Spruce, having a slow growth, fine, dense fiber, lends itself admirably to securing these qualities. However, almost any groundwood is sufficiently opaque when formed into a sheet. The myriad of fine, short fibers turn back light and prevent "see-through." Addition of sulphite or chemical pulp, which is much more translucent, neutralizes this advantage. Fine fibers also aid in the formation of uniform and even sheets, and assist in securing a smooth surface or finish that will reproduce type or half-tone cuts satisfactorily. Coarse fibers render the development of these properties more difficult. Pine fibers are acknowledged as being more coarse, thicker, and bulkier than spruce fibers, and thus introduce certain problems of refinement if these disadvantages are to be overcome. With nearly all present day newsprint papers, both opacity and surface finish are assisted by the addition of fine clay or other filler.

In the second growth southern pines certain conditions prevail that may complicate newsprint production. A wide difference is discernible in the fiber properties of springwood and summerwood. The springwood fibers are thin walled and flexible, with large cell cavities, and when in pulp form collapse on processing to yield well formed, dense sheets. Summerwood fibers are relatively thick walled and resist processing, tending to form bulky, weak sheets. These diverse properties of springwood and summer-

wood fibers are observed in all species, but in rapid growth pine the relative quantities of springwood and summerwood vary markedly and their effects are more noticeable. Furthermore, these components vary widely in different trees and growth areas.

On the basis of experimental work thus far, a high volume of springwood seems to be advantageous for both sulphite and groundwood pulp, yielding better textured, stronger, and higher colored pulps than those obtained from summerwood. If such wood is rather slow growth, it is still better. The respective properties of sheets made from sulphite pulps produced separately from pine springwood and from pine summerwood differ more markedly than those from pulps made from different species of northern pulpwoods.

Another growth factor, which is apparently of importance, is the presence of abnormal wood, such as compression wood, in the rapidly grown pines. Compression wood or related abnormal fibers markedly affect fiber properties and strength. Combined with the variables of springwood and summerwood, this abnormal wood probably accounts for the fact that southern pines has proved such a tricky wood to grind. Where spruce will yield a satisfactory product under a wide range of grinding conditions, pine is sensitive to handle and the grinding must be carefully controlled. The factors of stone surface, grinding temperature, and pressure are extremely important, and much information is needed before this phase of pine utilization will be fully under control; but growth variables are undoubtedly even more important. In an extensive series of tests in grinding southern pine, the following facts stand out: Best results were derived with a pine of fairly uniform growth rate, in which the volume of springwood was high, the color good and bright, and blue

stain or other decay absent. Older and slower growth trees are also suitable for groundwood, and the amount of heartwood is unimportant provided it is not dark colored. Heartwood may, however, result in pitch troubles, and a predominance of summerwood may affect finish and felting quality adversely.

In pines of rapid and eccentric growth there is a likelihood of compression or other abnormal wood—particularly in the butt logs. Such wood is unpredictable in pulping quality, and should be eliminated if possible.

The same considerations apparently apply to pine sulphite, with the additional factor that heartwood cannot be pulped by the sulphite process, as has already been noted, and heartwood-free sticks should be selected for use in this process.

One problem which constantly arises in the pulping of southern pine is the presence of resins, or so-called pitch. To the papermaker anything is "pitch" which coming from a pulp stock as it is being processed or converted, deposits sticky materials on his machine wires, press rolls, felts, or other machine parts on clothing. Much material of this sort occurs in pine. How serious it will be in southern pine newsprint production is a moot question. Every time anyone tries commercially to grind pine, or to cook it by the sulphite process, the pitch problem eventually comes to the fore.

Pitch trouble is not limited to pines. Pitch is experienced in pulping spruces and very few northern newsprint mills get through a year without its appearance. Usually pitch shows up in warm weather, and is often also associated with the use of unseasoned wood. Attempts have been often made to correlate pitch with the alcohol-benzene or ether or gasoline soluble components of the wood. These values are indicative, but not infallible. However, if evidence of much resin is shown, pitch trouble may be anticipated. A wood

low in pitch is to be desired, although the allowable limits have not been determined. Various samples of young pines examined at the Forest Products Laboratory have ranged roughly from 2 to 9 per cent ether and alcohol-benzene soluble material. Some evidences of pitch have been noted in pulping all of them. The average ether and alcohol-benzene soluble components are approximately 4 per cent. Perhaps this could be set as an allowable limit, but not with certainty. Apparently it is the condition of the pitch that is important, the amount being less significant. Conditions which cause agglomeration of pitch result in trouble, whereas if the pitch is dispersed properly no damage results. However, if much pitch is present it tends to build up, and eventually causes trouble. The building up may take place over a long time, say a week or more, and then effectively halt production for a long period. Pitch is the most baffling of paper mill difficulties and offers a real challenge to research.

In brief, a groundwood-sulphite newsprint development requires a wood in which there is as little dark colored heart as possible, only a small degree of blue stain, and preferably an excess of springwood over summerwood. In sulphite pulping, heart should be entirely absent. For best results in both processes wood of relatively even growth rate is desirable. The resin content should be low.

The current Forest Survey of the U. S. Forest Service shows definitely that immense quantities of young growth southern pine are at present or potentially available. Probably a large proportion of this potential pulpwood will meet the requirements of quality outlined previously. Few data are as yet available on this point. However, the point of view is frequently expressed by operators familiar with southern conditions that in almost any given quantity of pulpwood

various types, such as heart-free, heart-containing, variable growth rate, or low or high resin content, may occur. If so, selection may be necessary to procure suitable wood for sulphite and groundwood pulping, with the culls to be disposed of in some suitable way. For this reason it has frequently been suggested that a newsprint development in the South would stand the best chance of success if established in connection with a sulphate pulp mill which could use the rejected wood from the sulphite or groundwood processes.

Another suggestion is the substitution of semibleached sulphate pulp for the unbleached sulphite component of standard newsprint. Such a process would require selection of wood for only one process, the groundwood process, all culls, dark-colored, resin-containing, stained, or other unsuitable wood being diverted to the sulphate mill, the suitable light-colored material being used for groundwood pulp, and the acid process eliminated. The potentialities of such a development gain reality in the light of recent progress in the production of semibleached southern pine sulphate and the reasonable cost of this product in comparison with unbleached sulphite. The Forest Products Laboratory has produced newsprint papers on a laboratory basis by this means, and the experimental phases of the problem are well advanced. There is still need for a semicommercial demonstration of ample scope to disclose if any inherent weaknesses exist in the proposal, but it is hoped that this phase of work can be undertaken at an early date.

It is, of course, immaterial what method be used to produce a satisfactory newsprint from southern pine. It is important, however, in a long range view of the national economy, that we have at hand sound technical information on the pulp and papermaking qualities of these

and other American pulpwood species, and a clear conception of the feasible methods for their utilization. Honest differences in point of view as to the need for immediate development of a domestic newsprint industry and of the economic soundness of such a development exist

in different quarters. There is no such difference of opinion, it is believed, in regard to the desirability of fully exploring the domestic possibilities of newsprint production and, if deemed in the public interest, of using our national forest resources for the production of newsprint.

INFLUENCE OF FOREST PRACTICE ON THE SUITABILITY OF SOUTHERN PINE FOR NEWSPRINT

By E. L. DEMMON

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NEWSPRINT paper is not only the most important pulpwood product, as to volume, used in the United States but it also makes up the major part of the Nation's pulp and paper importations. A recent Forest Service report (3) indicated that future United States requirements might be supplied from its own forests, and that from the standpoint of forestry, conservation, and economic considerations, the South could be counted upon to supply annually as much as 2 million cords out of the 6.6 million cords of pulpwood estimated as necessary to meet the country's future requirements for newsprint. Although during the last few years there has been considerable publicity given to the possibilities of producing newsprint from southern pines, no pulp mill has as yet been constructed in the South for that purpose. Newsprint has been made from southern pines on a laboratory scale at the Forest Products Laboratory, Madison, Wisconsin, and the results of preliminary tests hold considerable promise. Dr. Charles H. Herty, in addition to developing satisfactory newsprint in the Pulp and Paper Laboratory, Savannah, Georgia, has

made an 8-hour run in a Canadian mill using southern pine pulp (6).

At present the South dominates the field in the production of pulpwood where the sulphate process is used, the principal products being brown kraft wrapping paper, bags, and box boards. Many species of southern woods, both softwoods and hardwoods, are suitable for the manufacture of paper, and with its enormous present and potential supply of timber, further expansion of the paper industry in the South is not only possible but probable. Paper mills which combine newsprint production with other types of paper are a possibility. This discussion, however, will be limited to the suitability of the four principal species of southern pines (longleaf, shortleaf, loblolly, and slash) for newsprint.

One or more of the four southern pine species predominate on approximately 130 million acres of forest land in the 11 southern states,¹ and make up substantial portions of the forest on many additional millions of acres. There is ample room for suitable locations of newsprint pulp mills in this great forest region, where over two-thirds of the entire area is for-

¹Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Arkansas, Texas, and Oklahoma.

est land. In selecting a southern location for a newsprint pulp mill, consideration should be given not only to the pulpwood requirements for newsprint, but also to correlating the production of pulpwood with other uses of the forest. These considerations should take into account prospective forest land ownership, as well as the various outlets for all products of the forest and the most profitable use of the land for all purposes.

REQUIREMENTS FOR NEWSPRINT PULPWOOD

Ordinary newsprint consists of a mixture of about 75 to 80 per cent of mechanical pulp (groundwood) and 20 to 25 per cent of sulphite pulp. The Forest Products Laboratory has also made newsprint on a laboratory scale by using a mixture of mechanical pulp and sulphate pulp. In order to meet the present requirements for good newsprint, pulpwood must be relatively light in color, of low resin content, and with a fiber of suitable size and strength. Second-growth southern pines of all four species have the qualifications of light color, low resin content, comparative freedom from heartwood, and suitable fiber, that make their use for newsprint possible and promising.

Raw material of the size best suited for newsprint pulping purposes comes from trees 8 to 12 inches in diameter (breast-high). Trees as small as 5 inches in diameter and as large as 15 inches in diameter are of usable size, and bolts to a 3-inch top diameter are sometimes taken, although a 4-inch minimum is preferred. Bolts over 12 inches in diameter are usually split. Although in the North it is the custom to peel pulpwood before shipment to the mill, it is assumed that pulpwood from southern operations will probably be delivered at the mills with the bark intact, as is the present practice at southern sulphate mills.

FACTORS IN SOUTHERN PINES INFLUENCING QUALITY FOR NEWSPRINT

Where heartwood is present in small quantities, it does not seriously interfere in newsprint production by the ordinary groundwood-sulphite process. However, if heartwood makes up a considerable proportion of the pulpwood volume, the manufacturing processes involved are more difficult to adjust. In practice, methods will probably be worked out wherein heartwood in southern pines will not be a serious factor. Resin content of the wood is an important factor in newsprint production, a low resin content being essential for good quality newsprint. That the sapwood in southern pines is relatively free from resin was reported almost 40 years ago by Roth (9), who stated: "Besides being of a lighter color, the sapwood differs from the heartwood in several respects. . . . The sapwood contains much less resin—both rosin and turpentine—than the heartwood. Thus in a section of longleaf the sapwood contained only 0.2 per cent of turpentine and 1 per cent of rosin, while the heart contained from 2 to 4 per cent of turpentine and 12 to 24 per cent of rosin. . . ."

Herty (5), who during recent years has repeatedly pointed out the low resin content of southern pine sapwood, had an analysis made of the sawdust from 30 young slash pines, varying from 4 to 10 inches in diameter, with the following results:

Percentage of resin, on dry basis (gasoline extract)	2.09
Percentage of resin, on dry basis (alcoholic extract)	2.79

The estimate of rosin content of this wood was 1.38 per cent.

A recent Department of Agriculture publication (12) states: "An investigation of the distribution of oleoresin in longleaf pine trees showed that in general

the sapwood of the longleaf pine contains comparatively small proportions of resin, while the heartwood contains varying large proportions depending upon its location in the tree. The sapwood may contain about 2 per cent of resin, the average heartwood 7 to 10 per cent, heartwood in the butt log 15 per cent, and the heartwood of the stump 25 per cent. . . . An examination of the wood of a number of specimens of young unturpented slash pines showed that it contained a varying amount of resinous material (ether extract). The outer sapwood was found to yield 1.63 to 4.81 per cent, the intermediate rings had a slightly higher content, and the rings at center, in some cases incipient heartwood, contained from 3.4 to 21.6 per cent. An average from composite samples of material from about 60 trees ranged from 2.5 to 3.3 per cent. . . . A higher resinous content was found in open-spaced, rapidly growing trees than in those which came from denser stands with slower growth."

Forest Products Laboratory publications show resin content of longleaf (1), shortleaf (2), and loblolly (4), as shown in Table 1.

TABLE 1
RESIN CONTENT OF WOOD FROM LONGLEAF, SHORTLEAF, AND LOBLOLLY PINE TREES

	Percentage of resin content ¹
<i>Longleaf</i> (35-40 years old, from Escambia County, Florida)	
Rapid growth butt logs.....	8.3
Medium growth butt logs.....	3.8
Slow growth butt logs.....	4.8
Medium growth top logs.....	5.2
<i>Shortleaf</i> (from Ouachita National Forest, Ark.)	
45-year-old trees.....	4.7
25-year-old trees.....	4.6
15-year-old trees.....	7.7
<i>Loblolly</i> (from Virginia, North Carolina, and South Carolina)	
Springwood.....	7.8
Summerwood.....	4.0
Compression wood.....	4.0

¹Total of solubility in alcohol-benzene and ether.

Formation of heartwood in second-growth southern pines usually does not begin until trees reach 15 to 20 years of age. Regardless of species, the proportion of heartwood in southern pines is very small in trees under 30 years old, and increases with age of the tree.

In 1897, Roth (9) stated: "There is considerable variation . . . in the age at which the transition from sap to heartwood begins. This age was rarely found to be below 20 years; as a rule the transition begins in young trees when the particular section of the tree is between 20 and 25 years old . . . The change from sap to heartwood begins earlier in young trees than in the younger portions of older trees. . . ."

The Appalachian Forest Experiment Station (7) in investigating the factors affecting the amount of heartwood present in 680 loblolly pines growing in different second-growth stands in the coastal plain of Virginia, North Carolina, and South Carolina, found that heartwood formation starts at ages between 14 and 23 years, and that practically no trees under 20 years of age contain an appreciable amount. It was also found that for a given age the fast-growing trees have a relatively smaller proportion of heartwood, while older trees growing at the same rate as younger trees have a larger percentage volume of heartwood. Trees growing in open stands on good sites have less heartwood in proportion to their total volume than those growing on poor sites in dense stands.

If entirely heart-free material is essential, enormous quantities of it are available in trees under 20 to 25 years old in second-growth stands throughout the South. The relatively small amount and light color of the heartwood in typical second-growth southern pines does not seriously interfere with their suitability for newsprint. In longleaf and slash pines that have been turpented, larger pro-

portionate volumes of heartwood are found, but even with such timber it is not a difficult matter to separate out at the mill the bolts containing heart from those made up of all sapwood.

The proportion of heartwood in trees of the same age varies with rate of growth, the more rapidly growing trees having smaller proportions. If it were essential to have entirely heart-free wood, it could be produced by regulating the time of cutting.

Recent Forest Products Laboratory studies on loblolly pine (4) indicate that the proportions of springwood and summerwood influence the quality for newsprint; the larger the proportion of springwood, the better the quality and resultant color. Rate of growth has a bearing on the proportion of springwood to summerwood, rapid growth being associated with larger proportions of springwood. Forest management practices, such as varying the density of stocking, can be used to influence springwood formation.

Knots in pulpwood are a defect for newsprint, in that they constitute a source of waste in the pulping process. At the southern sulphate mills bolts are usually not acceptable unless the knots have been trimmed flush, and wood cut from the extreme tops of trees and containing an excessive number of knots is not wanted. The number and size of knots can be controlled to a certain extent by forest management practices. Forest Service studies (13) have shown that close planting of loblolly pine (5 x 5 feet and 6 x 6 feet) in 10 years produced trees of better form, with smaller knots, and wood of finer grain (less diameter growth per year), than wider spacing (8 x 8 feet). These differences in spacing had no influence on height growth at that age.

Bark may be removed either before pulpwood is delivered at the mill or during the first stages of processing. When pulpwood is purchased with the bark

intact, allowance should be made for its volume and for the cost of its removal. The approximate bark volumes of southern pines obtained by comparing the volumes of peeled and rough wood in normal fully-stocked second-growth stands (11), is shown in Table 2.

TABLE 2

BARK VOLUMES IN SECOND-GROWTH SOUTHERN PINES, IN PERCENTAGE OF TOTAL VOLUME OF UNPEELED WOOD

D.b.h. Inches	Species			
	Longleaf Per cent	Shortleaf Per cent	Loblolly Per cent	Slash Per cent
6	22.2	17.3	19.4	26.8
8	20.2	15.4	17.5	24.0
10	17.8	11.8	16.0	21.7
12	14.5	11.2	14.5	19.4
14	13.6	10.5	14.0	19.4

Bark thickness varies with size and age of trees, density of stand, and site conditions. For southern pines of pulpwood size, bark volumes will usually range between 12 and 20 per cent.

Turpentine tends to increase the proportionate volume of heartwood, and consequently the resin content of the wood, in longleaf and slash pines. On the basis of preliminary studies, it appears that the heartwood content of longleaf pine is increased 5 to 10 per cent by volume as a result of turpentine. In utilizing worked-out turpentine trees for pulpwood, the butt cuts may have to be discarded because of high proportions of resin or because of deterioration caused by insects and fire.

Blue stain develops rapidly in southern pine pulpwood under the moist climatic conditions often prevailing in the South. When stain is present in small quantities it is not a defect for newsprint purposes. Heavy blue stain lowers the quality somewhat from the standpoint of color, and is also an indication that conditions are favorable for deterioration of the wood by decay organisms. It is good practice, therefore, to provide for a continuous pulpwood supply without concentrating

large quantities in the mill yard. A continuous wood operation fits in much better with sustained-yield forestry than if it were feasible to store pulpwood at the mill for periods of several months. The present practice at southern sulphate pulp mills is to keep relatively small supplies of pulpwood in the yards, usually sufficient to run the mills less than a month.

FOREST MANAGEMENT PRACTICES FOR PULPWOOD PRODUCTION

The possibility of utilizing second-growth southern pines of relatively small sizes for pulpwood purposes offers an additional opportunity to practice forestry on a sustained-yield basis and thus aid in the stabilization of forest communities. In connection with pulpwood operations in this region there is an opportunity to integrate pulpwood utilization with that of other forest products, including sawtimber, poles and piling, railroad ties, etc., and in the longleaf-slash pine region, turpentine for naval stores.

It is possible to grow pulpwood on relatively short rotations where all the timber cut goes into this single product. In this case silvicultural treatment will involve even-aged stands, utilizing thinning after the trees have reached pulpwood size and, after the final cut, securing a new stand by such methods as leaving seed trees, cutting in strips to allow seeding from the side, or by artificial

replanting. The latter has proven to be cheap (less than \$5 per acre) and an easy and successful method of obtaining a new stand.

Southern pines can also be grown and harvested under the selection system of management, where a growing stock is always present and cuttings are made on relatively short cycles (at 5- or 10-year intervals), removing only a part of the stand at each cut. It is believed that this method will be particularly adaptable in the shortleaf-loblolly region, and possibly also in slash pine forests.

The method of management best suited to any particular stand or locality will depend on the species of trees growing on the site and climatic conditions, and the kind and quality of products desired. Protection from uncontrolled fire and regulation of grazing are essential to forest management in the southern pine region.

To illustrate the possibilities of growing southern pines on an even-aged basis where pulpwood is the only product, an example is given here for each of the four principal pine species. Table 3 gives the estimated periodic and final yields obtainable from normal, fully-stocked natural stands growing on average sites. It includes the amounts that could be removed in intermediate cuts as well as in the final cut at the end of the rotation. These figures are based on the best present information of the Southern Forest Experiment Station, and are con-

TABLE 3

ESTIMATED PERIODIC AND FINAL YIELDS OBTAINABLE FROM NORMAL EVEN-AGED NATURAL SECOND-GROWTH SOUTHERN PINE STANDS, ON AVERAGE TO GOOD SITES, UNDER SIMPLE MANAGEMENT

Species	Site index ¹	Possible optimum pulpwood rotation	Possible periodic and final cuts per acre at different ages								Total yield per acre for the rotation	Mean annual growth per acre over the rotation
			Age in years									
			15	20	25	30	35	40	45	50		
	Feet	Years	Cords								Cords	Cords
Loblolly	90	30	5	5	10	20	---	---	---	---	40	1.3
Longleaf	70	50	---	---	5	3	3	5	10	20	50	1.0
Slash	80	30	10	10	10	20	---	---	---	---	50	1.7
Shortleaf	70	40	0	5	10	10	10	20	---	---	55	1.4

¹Height of average dominant tree in stand, at 50 years of age.

considered conservative. Under intensive forest management and on better than average sites, these yields should be exceeded. Where the forest is managed on an all-aged or selective basis, yields might even be better than those obtainable where even-aged management is practiced.

The amount of land needed to furnish the pulpwood requirements of a newsprint pulp mill will vary according to the quality of the soil and the methods of forest management used. The mill owners may wish to acquire sufficient land to supply only a part of the mill requirements, obtaining the remainder of their requirements from other owners of timber land in the locality. This is the usual practice of existing sulphate mills in the South.

If the mill is dependent in part on pulpwood supplies from other owners of forest land, it is good business to help them maintain the productiveness and quality of their timber lands by requiring, in purchase agreements, that stands be left in good condition to grow future crops of pulpwood. In some cases, southern sulphate pulp mill owners have seemed more interested in obtaining a cheap supply of wood than in planning for continuous future supplies. If the owners of forest land near their mills were to adopt simple and practical forestry measures, it would help assure the pulp mill a more continuous future supply. The adoption of such measures by a mill in the shortleaf-loblolly timber type in northern Louisiana has recently been reported by Moore (8). This sulphate mill inserted in its pulpwood contracts simple cutting instructions designed to keep the land continuously productive. The measures included leaving a few larger trees for seed, and smaller trees for future growth.

If a combined pulpwood and naval stores operation is contemplated, or the production of pulpwood and sawtimber

with or without turpentining, or any other combination of forest products, the plans for management of the forest must be varied accordingly. Although pulpwood may be the principal product desired, good pulpwood yields can be obtained even when part of the stand is reserved for sawtimber or is turpentined. In the latter case, trees worked out in turpentining operations form part of the pulpwood resource. In making plans for integrated forest utilization, the possible costs and returns to be expected from each forest product should be carefully considered. Conditions will vary with each locality or situation, and plans can best be worked out on the ground, giving due consideration to the economic as well as the physical factors involved.

In recent years southern pine pulpwood has sold at abnormally low prices, due to the depression (10). Costs of rough pine pulpwood, which at present average about \$4 per standard cord, delivered at the mill, were between \$5 and \$5.50 during the 1925-29 period. Present prices can be expected to increase as economic conditions improve, and future prices for pulpwood delivered at the mill can be expected to average around \$5 per cord. This will probably be made up about as follows: stumpage, 75 cents; cutting, \$1; transportation from stump to mill, \$2.25; and margin for profit, \$1. Cordwood is sometimes purchased by weight rather than by volume. One southern sulphate mill estimates 5,300 pounds of freshly cut unpeeled wood the equivalent of one cord.

HYPOTHETICAL FOREST SET-UP FOR A SOUTHERN NEWSPRINT PULP MILL

There are a great many factors to be taken into consideration when selecting a suitable site for a pulp mill. In addition to providing for an ample and continuous supply of good quality pulpwood,

other considerations include the availability and costs of water, fuel, and chemicals, the transportation facilities, proximity to markets, the labor supply, taxes, etc. The South is particularly well situated in these respects, but especially in its present and potential supply of timber suitable for newsprint. It is significant to mention here that wood is the most important single item of pulp cost.

The area of forest land needed to supply a pulp mill with wood will depend on the species of trees grown, the site quality, climate, and the method and intensity of forest management. Newsprint mills are rated as to size according to their daily output in terms of tons of paper or pulp. Although the optimum capacity of a newsprint mill in the South may be several hundred tons of newsprint daily, the calculations presented here will be based on supplying the needs in perpetuity for a mill with a daily capacity of 100 tons of newsprint paper. If figures are wanted for mills of other capacities, the data given for a 100-ton mill can be used as a basis.

The forest land needed to supply the mill may be owned entirely by the mill, or only in part, the balance remaining in other ownership. If the latter policy is adopted, it is assumed that the same kind of forest management will be adopted for the entire area concerned.

In calculating the timber supply needed for a newsprint mill, it is estimated that an average of 1.2 standard cords of unpeeled pulpwood of any of the four southern pines will produce one ton of newsprint paper, using the ordinary combinations of mechanical and chemical pulp. For paper made by the sulphite, sulphate, or soda processes, 1.8 to 2.0 cords of unpeeled wood will be required per ton of pulp produced, whereas mechanical pulp takes only 1 cord per ton. A standard cord measures 4 x 4 x 8 feet, or 128 cubic feet gross. Southern pine

cordwood of usual size averages in solid content about 78 cubic feet of unpeeled or 92 cubic feet of peeled wood per standard cord. Much of the cordwood used by the present sulphate mills in the South is cut in 4.5- or 5-foot lengths instead of the standard 4-foot length. For these long cords, the volume of wood per cord increases proportionately. An average converting factor of 71.5 per cent can be used to obtain the solid volume when stacked volume is known. An average allowance of 15 per cent for bark volume can be used when converting rough to peeled wood.

An average of 120 cords of unpeeled southern pine pulpwood will be needed to produce 100 tons of paper. Assuming that a mill operates 320 days per year, a supply of approximately 38,400 cords of wood will be consumed annually. Figuring conservatively, southern pine stands of any of the four principal species on average sites can be expected to produce under simple management an average of three-fourths of a cord per acre per year, whereas on the better sites and with more intensive management an average growth of one cord or more per acre per year should be attainable. An average growth rate of three-fourths cord per acre per year assumes the adoption of silvicultural measures that will keep the land about 75 per cent stocked. Under such conditions, it is estimated that a 100-ton mill would use all the pulpwood produced on 51,200 acres of productive forest land, assuming the maintenance of a normal distribution of trees of all sizes from seedlings up to the final product. The maximum size of tree grown will be determined by the method of management adopted and whether products other than pulpwood are desired. It is believed that other forest products, including some sawtimber, could be grown on this 51,200-acre tract with very little dim-

tion in the quantity and quality of pulpwood produced.

It would be impossible to obtain as much as 51,200 acres of productive forest and all in one contiguous tract. There will always be a certain amount of waste and non-productive land intermingled with the good, and usually some scattering of farm land also. Roads, railroads, streams, etc., take up part of any area selected. In order to make our figures more realistic, it is assumed that the non-productive or other land makes up 20 per cent of the area needed to supply the pulp mill with its necessary pulpwood requirements, giving for the 100-ton mill an area of 64,000 acres.

If the pulp mill were located centrally with respect to this 64,000-acre tract, it would mean that the maximum haul for pulpwood would not much exceed 5.5 miles. For a 200-ton plant, requiring 28,000 acres, the maximum distance would be approximately 8 miles. For 300- and 400-ton mills, the distances would be about 9.8 and 11.3 miles, respectively. Of course, if the mill were not located centrally with respect to the forest resource, the maximum hauling distance would be correspondingly greater.

Until the forest is on a sustained-yield basis, it would be necessary to obtain some of the pulpwood from greater distances. With good roads and use of trucks it is now possible to obtain pulpwood economically from considerable distances away from the mills. In fact, existing southern pine sulphate mills obtain pulpwood from as far as 25 to 30 miles by truck haul and 100 miles or farther by rail or barge.

SUMMARY

The quality of southern pine pulpwood for newsprint purposes can be readily controlled by forest practices. Pulpwood with no heartwood, or with

limited amounts, can be obtained by using a short rotation, and by maintaining a rapid rate of growth by proper thinning. If maximum yields per acre are to be obtained, ample growing stock must be provided and longer rotations used. Lengthening the rotation may increase the percentage of heartwood, but not to the extent of seriously affecting the value of the wood for newsprint pulp.

Since wood is the most important single item of pulp cost, the South, because of its present and potential supply of timber, is particularly well situated to attract the newsprint industry. Under intensive management and on the better forest sites, an average growth of one cord or more per acre per year can be expected. There should be no difficulty in supplying newsprint pulpwood of any size or quality, from any one of a great many localities in the 130 million acres of southern pine territory. Rapid growth, easy logging conditions, and favorable economic factors assure that the South will play a prominent role in supplying the United States with its future newsprint requirements.

LITERATURE CITED

1. Bray, Mark W., and Paul, B. H. 1930. The evaluation of second-growth longleaf pine pulpwood from trees of varying rate of growth. *Southern Lumberman* 141(1793):163-168, 170.
2. ———. 1934. Evaluation of shortleaf pine for pulp production. *Paper Trade Journal* 99(5):38-41.
3. Curran, C. E., and Behre, C. E. 1935. National pulp and paper requirements in relation to forest conservation. Senate Doc. 115, 74th Congress, 1st Session. Pp. 1-74.
4. Forest Products Laboratory. Effect of growth variables on the quality of loblolly pine pulps. Unpub. ms.

5. Herty, Chas. H. 1929. Future possibilities in the utilization of cellulose. *Jour. Chem. Education* 6(5): 829-845.
6. ———. 1935. Cellulose from southern pine. *Proceedings of the Dearborn Conference of Agriculture, Industry and Science*, May 7-8, 1935. Pp. 41-57.
7. MacKinney, A. L., and Chaiken, L. E. 1935. Heartwood in second-growth loblolly pine. *Appalachian Forest Exp. Sta. Tech. Note* 18. Mimeographed. Pp. 1-3.
8. Moore, Robert. 1935. Effective extension procedure for the conservative cutting of pulpwood on small woodland areas. *Jour. For.* 33:46-51.
9. Roth, Filibert. 1897. Notes on the structure of the wood of five southern pines in "Timber Pines of the Southern United States" by Chase Mohr. U.S.D.A. Div. Forest. Bul. 13 (Revised). Pp. 143-153.
10. Southern Forest Experiment Station. 1935. *Southern Forestry Notes* 133. Pp. 4.
11. United States Department of Agriculture. 1929. Volume, yield, and stand tables for second-growth southern pines. *Misc. Pub.* 50. Pp. 11-202.
12. ———. 1935. A naval stores handbook. *Misc. Pub.* 209. Pp. 11-201.
13. Wakeley, P. C. 1935. Artificial reforestation in the southern pine region. U.S.D.A. Tech. Bul. 492.

DISCUSSION

Capt. I. F. Eldredge: I have been asked to give you, in the next ten minutes, the information that it has taken the Forest Survey three years of intensive field work to get. I shall confine myself mainly to the deep South. Its total area is 197 million acres, made up as shown divided in Table 1.

TABLE 1

AREA CLASSIFIED BY GENERAL FOREST TYPES

Area subdivision	Acres	Per cent forested
Coastal plain pine.....	78,000,000	68
Delta hardwood.....	22,000,000	51
Loblolly-shortleaf-hardwood.....	85,000,000	60
Appalachian hardwood.....	12,000,000	70
Total area.....	197,000,000	63

These figures are estimates. For 12 survey units, having a gross area of 82 million acres, of which 66 per cent is forest land, we have more precise data, which are broken down by land uses and forest types in Table 2.

TABLE 2

AREA CLASSIFIED BY LAND USES

	Million acres
Non-forest:	
Cropland in cultivation.....	17
Idle and abandoned agricultural land.....	4
Pasture.....	4
Other land (marsh, town, etc.).....	2
Total non-forest.....	28
Forest:	
Longleaf and slash pine (45 per cent).....	22
Loblolly-shortleaf pine (31 per cent).....	17
Hardwood (24 per cent).....	13
Total forest (100 per cent).....	54

Figure 1 shows this forest area classified on the basis of character of the stand. "Clear-cut" here signifies forest land from which the timber has been removed and on which no other crop has been established.

Of the forest area, 76 per cent is in second growth from 10 to 50 years old, with a total volume, if all computed in cordwood, of 441 million cords; and of this total 339 million cords, or 8 cords

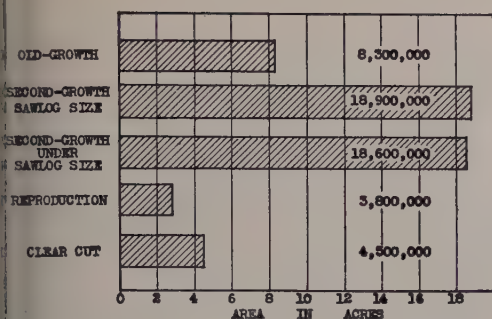


Fig. 1.—Forest area by forest condition, based on 54 million acres of forest land.

per forest acre, is in pulping species—pines and the softer of the hardwoods.

In Figure 2 this 339 million cords is broken down by diameter groups. The group from 20 inches up, which should yield high-grade sawtimber, furnishes only 13 per cent of the volume; whereas approximately 60 per cent comes from the trees between 14 and 6 inches, below which nothing is included.

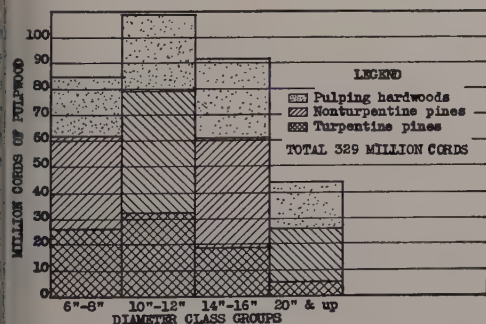


Fig. 2.—Pulpwood resource by diameter groups, based on 12 survey units including a total area of 82 million acres, of which 54 million are forest.

Figure 3 shows a more complete picture. It is a stand table, expressed in millions of trees, for the only one of the 12 survey units for which such a table has been worked out—Florida Unit No. 1, with a gross area of approximately 10 million acres. It is quite representative for all the naval stores regions, and from the standpoint of relative diameter classes

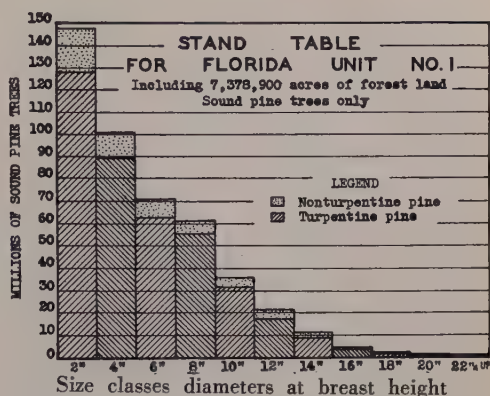


Fig. 3.—Stand table for Florida Unit No. 1.

is fairly representative for the entire 54 million acres.

Note how small a part of the stand is in the size from which we can expect high grade lumber material in the near future. Of a total of 456,000,000 trees, less than 4,000,000 are 18 inches and over. Nearly all of the stand, in number of trees, is under 12 inches, and most of the trees are under 6 inches.

Now, 95 per cent, at least, of the timber in this region is privately owned, and under any program of public forest acquisition at least 80 to 85 per cent, and possibly more, is apt so to remain. It is rather hard to picture private ownership so well fixed financially that it will deliberately pass up the opportunity to convert that young growing stock into money at the shortest possible rotation, rather than hold it for from 10 to 80 years for sawtimber, regardless of what the South's duty might be toward maintaining a part in the production of high grade sawtimber material for the Nation.

I call your attention to the subregion of the 50-million-acre naval stores forest. There are 1,200 turpentine orchards located in this region, very thickly in the Southeast and more thinly toward the West, but sufficiently numerous to dominate the ownership and use of by far the greater part of the longleaf and slash pine timber. The turpentine operator

starts on this timber when it is 8 inches or less in diameter, and turns it loose, as having been exhausted and liquidated, when it averages slightly less than 12 inches. It is too small for sawtimber, and has lost the butt sections to boot. The volume per acre is too light for profitable logging. In this particular region, the longleaf and slash pine seems destined to some use other than high grade sawtimber.

Our Survey data show a very serious damming up of discarded turpentine timber. Over 7,500,000 cords of worked-out naval stores timber, averaging less than 12 inches in diameter, have been picked over for all the higher commodities, and now await new industrial use. If this timber is not removed, a continuous production on that area will be blocked because we cannot open the soil for regrowth.

To maintain its present production the naval stores industry discards annually 1,800,000 cords of wood in abandoned trees, of which 85 per cent is suited only for pulpwood. That, plus this accumulated 7,500,000 cords of wood, is one of the economic problems of our part of the South.

Now for a rough estimate of growth as against drain for this 82,000,000 acres embraced in the 12 Survey Units, of which 54,000,000 acres are forested. According to our incomplete and tentative data, the annual growth of pulpwood material on that pulpwood growing stock of 339 million cords is approximately 18 million cords per annum. The drain in 1934, including lumber, poles, piling, ties, container wood, pulpwood, and fuel, was only 95 million cords. It is almost sure that the lumber drain will increase, and it is quite possible that some of the other drains will also, but a very wide margin exists. There seems to be no reason whatsoever to believe that, if the paper industry wants to come South, the supply

of timber now, and in the future, will present any obstacle.

Dr. Charles H. Herty: For the last four years we have been carrying on rather intensive research in our Savannah laboratory on the suitability of the southern pines for various grades of paper. I am no special advocate of any particular method of pulping wood for paper. I don't care whether it is sulphite or sulphate. What I want to see is mills built in the South, where our people can find a market for this great volume of wood. While we are talking primarily on newsprint today, there are other forms of paper which must be taken into account. In regard to newsprint, I have brought here with me run number 236, which was made just 5 days ago, because it represents what has been to us the toughest nut we have had to crack. To obtain newsprint from fast-growing pine is a perfect cinch. The thing that has given us trouble has been longleaf pine grown in very dense stands through which fires have burned annually, and in which the rings are very small with a predominance of summerwood. I am happy to say that last week that problem was completely solved.

Here are some specimens of newsprint made from just that type of pine. The color is excellent. There is no trouble about color, which depends on how much blue or what shade of dye you put in the pulp, as is done in every newsprint mill. The paper shows a burst of 26 per cent as against an average of 24 per cent for 16 commercial samples furnished us in the laboratory from various publishers including the New York Times and the Scripps-Howard and Hearst papers. The tear is 70 per cent, which checks almost identically with the average of those 16 commercial varieties, and the tensile strength is 5,500 per cent, which again checks.

This specimen is made of 25 per cent

sulphite and 75 per cent groundwood. We used those ratios because we are carrying on a systematic experiment covering 12 sulphite "cooks" and we wanted this to be in line with them. Here are some sheets showing the tests on weight, thickness, stiffness, burst, tearing strength, tensile strength, and porosity of newsprint furnished by the publisher, and also there are tests of three paper runs made in the laboratory on fast-growing pines. You will see how much greater in strength are these samples of pine paper.

I want to confirm what Mr. Curran said this morning, that newsprint can be made just as well from groundwood and sulphate pulp, semibleached. Here is a sample we made on July 25, 1935; 21 per cent semibleached kraft and 79 per cent groundwood, as nice a sheet as any of the others. I have also brought with me some book paper, for which there is a wonderful possibility in the South. Here is one made of 100 per cent bleached pine sulphite. Here is one of 50 per cent bleached pine sulphite and 50 per cent bleached gum sulphite. We have used black gum, sweet gum, and tupelo gum, and all work equally well. Here is another sample, of a run made January 25, 1936. I would like those of you who are interested in book paper to examine its formation and general properties. It has seemed to amaze a number of book paper manufacturers that such paper can be made out of that beautiful combination of the long fiber pine and the short fiber gum.

Here is another new sample—rayon spun in our laboratory from bleached pine sulphite. Its strength is identical with commercial rayon. It is spun from pulp than can be made profitably for \$35 a ton at the mill. The same quality of spruce pulp is being bought by mills here in Georgia today at \$70, plus \$8 freight. Here is a sample of rayon made from bleached southern pine kraft. It is

a little low in wet strength as compared with the sulphite rayon, but that is because it is only the second sample we have made. Give the boys two or three weeks more and there is no question in my mind that rayon can be made from the bleached pine kraft as well as from pine or spruce sulphite. If you can make rayon like that, it is a very simple matter to make cellophane; the only difference is that in one case you squirt the viscose solution through a hole and in the other through a crack.

I think that, in the light of Captain Eldredge's figures, everything that is said in the Hale report about timber in the South can be thrown in the discard. This is up-to-date material based upon an actual survey.

Groundwood made from all sapwood pine is decidedly lighter and brighter in color than groundwood made from spruce. There is no question whatever of getting a good bright sheet of newsprint from logs containing from 5 to 10 per cent of heartwood. We have ground logs up to 100 years of age without any difficulty from resinous matter, though the pulp is is not quite so bright with this higher percentage of heart; but with 5 to 10 per cent, from trees up to 35 to 40 years of age, there is no difficulty. Hence in making groundwood we do not have to take into consideration the separation of sapwood and heartwood. For the sulphite process, of course, we cannot use heartwood, because it comes out as screenings. But as Captain Eldredge has shown, there is an enormous supply of young trees for sulphite pulp.

I don't think it is the economic situation that is holding back the manufacture of newsprint in the South. I know too well the pressure of the banks; the propaganda that has been turned loose throughout the country against southern pine. But you can't stop simple economics. When you can make newsprint

and deliver it in New York, as testified before the N.R.A. by the Canadian and northern United States industry, for not less than \$47.43 a ton, and when we say without fear of refutation that you can deliver pine paper of the same quality in New York for \$27.54 a ton, those costs are going to be the determining factor in the long run.

The figures on which Captain Eldredge's survey is based are of timber that is grown in spite of man. These woods have been burned from year to year. They have never been given any thinning. Our people never realized these saplings had any value. What may be expected when fires alone are kept out of the woods? Go anywhere in the South and see the rapid growth where millions of acres are now under intensive fire control. If any of you are in Quitman, Georgia, it will pay you to stop there by the roadside and see one acre of land on which slash pine is growing that is now five years old. I expect to go there next week and thin out every other tree and make paper from these 5-year-old thinnings, because the trees are 25 feet in height and 5 and 6 inches in diameter. A young farmer, Marion Renfro, planted corn between the rows of pine and stimulated the growth while he was paying for the pines from the yield of corn.

Mr. R. S. Kellogg: I am going to start from the point where my good friend, Dr. Herty, refused to proceed any further. Economics eventually determine events. The newsprint industry of the United States is part of a continental industry, which in turn is a part of a world industry. Every kind of paper that is made and sold in the United States except newsprint is made and sold in a protected market. Newsprint and pulp are made and sold in world markets, subject to world competition. It is one thing to talk about building kraft and book and

writing paper mills in the South, and quite another thing to talk about building more purely pulp mill or newsprint mills in the South, because you come up against a vastly different set of conditions.

We have on the North American continent a theoretical capacity to make newsprint of 18,300 tons daily. To be conservative, I am going to say that the capacity of the North American newsprint industry today, at a reasonable price, is 16,000 tons a day. I have thrown away 2,300 tons for good measure to start with.

Now, I am not talking about operating paper mills 320 days a year, which would include too many Sundays, nor 309 days, which is the ordinary number of working days in the paper industry. I am going to say 300 days in the year for good measure, to allow a little for breakdowns now and then, an extra holiday or two, and the like. That gives a possible annual output of 4,800,000 tons of paper.

Now, remember we are operating in a world market. We will bring into the United States this year, so far as I can judge, more than 200,000 tons of newsprint paper from Europe. There were 197,000 tons imported last year, and imports will probably be higher this year. So we have a visible supply of 5,000,000 tons possible production, at a reasonable price, plus imports; and the imports are the most certain thing in the picture.

So far as I can tell, and I think I know fairly well, in 1936 we are going to have a United States consumption of newsprint of 3,500,000 tons. I am putting it at 200,000 tons more than we used in 1935, and that is for good measure. We are going to export overseas from North America in 1936 about 700,000 tons; a little from the United States, a good bit from Newfoundland, and possibly 500,000 tons from Canada. We are to have a Canadian consumption in the neighborhood of 200,000 tons; and that all adds up to 4,400,000 tons. And that is the utmost distribution of North American

newsprint that we can forecast on an optimistic basis for the year 1936.

There seems to be some gap between this figure and the possible production figure at a reasonable price for paper, does there not? In other words, there are 600,000 tons still available at a reasonable price for paper; and that excess of possible production, more than anything else, is going to determine what is done in the way of building additional plants, whether it is in the South, in Canada or Newfoundland, or in Alaska. Consider the overhanging burden of that excess tonnage, all in existing plants and in existing machines which might operate if they had favorable situations. That is the economic phase.

Mr. R. W. Graeber: Why not move some of those machines and mills South where you can get cheaper pulpwood?

Mr. Kellogg: I suspect you would have no trouble buying a lot of them, some at almost a junk price, and by the time you set them up down here you would probably be sorry you did it; you probably had better buy new ones.

The South Atlantic and the Gulf Coast consuming points are getting the cheapest newsprint paper that is being delivered anywhere in North America. The paper comes from United States mills and Newfoundland mills, and from Sweden and Finland, and perhaps Norway and Germany, and from British Columbia. So the South is fighting territory, and it is going to be fighting territory; the mills which are now in existence are going to continue to fight for their markets. The total consumption in all the southern states is around 200,000 tons a year, out of 3,500,000 tons in all the United States. And 200,000 tons a year is only the production of four modern newsprint machines; and no more than one good, fair-sized modern mill can make. If you are going to produce newsprint in the South

you will have to depend for your market very largely on the North, where the big consumption is; and you will not transport it from the South any cheaper than it is transported by water from Northern mills or from overseas. Newsprint is taken by water from Sweden to Oregon and Washington for \$5 a ton. They are paying scarcely any more to take it to the Pacific Coast than to the Atlantic. Some sixty-odd or seventy-odd thousand tons of European paper are going to the Pacific Coast. Ridiculous as that seems, it shows the kind of competition that exists when you get into a world market.

In 1935 four countries made a new world record in the production of newsprint paper. One or two of them do not come into this market, but they go into the world pot. Those four countries are Japan, Great Britain, Sweden, and Finland. They all made more newsprint paper in 1935 than they ever made before in history. That is what I mean by world competition. These 200,000 tons that come here from Europe, and have been coming here ever since 1920 in larger or smaller quantities each year, have, every ton, come at \$5 to \$7 a ton under the domestic price. The Finns, for instance, maintain that the proper differential for them is \$7 a ton under whatever the domestic price may be. That is the way they maintain their hold on the market. They run their plants one hundred per cent and they live on their forest resources. They put their forest products on the market wherever they can sell them. That is the way they pay their war debt to the United States, largely in newsprint paper.

I have never said you could not make newsprint down here. But making it is one thing and making money out of it is another thing. These plants that are in existence are not going to fold up and quit because of something going on somewhere else.

Forty per cent of the total North American capacity to make newsprint paper is in bankruptcy, receivership, or some serious financial difficulty. That situation will not be cleared up until there is a big wiping out of capital structure. When that is done, you will still have those plants and machines in existence, run at a less capital charge than they ever had before; and they will continue to fight for markets. The thing that has repeatedly upset the newsprint market in the past two or three years has been operation under the control of receivers or banks that have been compelled to run plants. You will be permanently up against this world competition; and if world competition is not economics, I do not know what it is.

Mr. Julian Rothery: I have had a number of years' familiarity with the newsprint industry in Canada, which sends into this country about two-thirds of our consumption, something like 2,500,000 tons annually. The newsprint industry is by far the largest single industry in Canada. It largely draws its supply from the Crown Lands forests of the different provinces. It is one of the great revenue producers of these provinces; it affords the labor of the community, rural and urban, their opportunity for work; and from its exports of newsprint Canada gets the greatest single item with which to pay for her imports—for Canada is an importing country. There is invested in the paper industry in Canada about \$700,000,000, of which about 80 per cent is said to be American capital.

If competition comes from the southern pine, Canada will have to face the situation. Wood is cheaper in the South, on a comparable basis of figuring, I think by at least \$5 a cord. Those mills would not close up in the face of competition. They may cut their capital in half. It is better to obtain a return on a capital investment scaled down to \$15,000 or

\$10,000 per daily ton of production than to lose the entire investment of \$25,000 per daily ton, which is about what a newsprint plant costs initially. The provinces also have a little up their sleeves—they can cut the stumpage price of wood; they can possibly build roads and put in driving facilities to develop the more remote sections of the Canadian pulpwood forest, tributary to the St. Lawrence. Another thing; the newsprint mills might go to the great power companies for adjustment in rates. Power is an important cost item—\$3 or \$4 or \$5 a ton. Canada will certainly endeavor to make up some of the differentials against her. Now, if we take a differential of \$5 a cord—perhaps \$6 a ton of paper—some mills in Canada have their wood supply stabilized at a cheap figure, and others do not, but will have an increased wood cost as they are forced to go farther up the rivers, to lands more difficult of access and more difficult of delivery. Other mills will be growing obsolete and wearing out.

Perhaps I can picture to you, briefly, what is likely to happen by recounting a very interesting conversation I had with one of the ablest paper manufacturers in the country on the development of the industry in the South. I asked him: "What will be the trend? Can you give me an idea of a time element in this competition and migration from the North to the South?" "Yes," he said, "I can. From 1925 to 1935, in one decade, we saw the kraft industry come to the South. The next papers that will come are the books, and the bonds, and the bleached papers, which are right now in the course of moving to the South. We are just beginning to successfully bleach, on commercial scales, the pulps to make the fine grades of paper. The newsprint industry will come, at first in a small way, probably with difficulties and failures, when the wood costs in Canada are higher than the present differential against

them and some of those mills are out of production. In my opinion it will be here in reasonable volume and with fair financial success in not less than fifteen years."

Dr. Herty: If you can make an article for \$47 and another man can make it for \$27, there is going to be enough sporting blood in some man's veins to put up a mill and try to take advantage of that difference. I can say from information that has come to me during the last two weeks that there is going to be a newsprint mill started in the South in the next few months; and let that mill operate one year, turn out its products and make money, and the rest is not going to be a trend, but it is going to be a flood.

Mr. Kellogg says you cannot deliver paper on account of freight. Right along the South Atlantic coast you can deliver newsprint to New York City for \$3 a ton, which is half what it averages from various existing mills in the United States according to Mr. Kellogg's figures before the N.R.A. Interests from the Pacific Coast have requested me to join in the effort for a tariff on sulphite pulp. I have in my hand a letter from one of the largest manufacturers in Maine, wanting to know if the South would join in getting a tariff on newsprint. I say we do not need a tariff. We need simply capital, to make newsprint cheap enough to compete with the world. The competition from Finland and Sweden is bound to be restricted because its quantity is limited by the slow rate of growth of trees in those countries.

Mr. Kellogg spoke of a reasonable price. If a price level is sustained through lack of development in the South, that is a direct tax, not on the publishers of the United States, but through the publishers upon all the people of the United States, if we can make cheaper newsprint in the South. As for what we owe the people in the North who developed that country, we are all Americans. People here in

the South have been kept out of a rich inheritance through ignorance of what they possessed; many of them live in almost squalor. Better times are due them. They have been carrying the bulk of the poverty while other places were developing. It is bad for this Nation to have any part of it held back or held down. The development of a great paper industry in the South is going to mean the elimination of the one-room house for families, better food for those who are living on corn bread and occasionally a bit of white meat, better clothes for those who go in tatters today. On this great coastal plain running down the Atlantic Coast and Gulf Coast, a great mass of the population of the United States is living right in the midst of the finest paper material, who for generations have endured the hardest kind of poverty. While I hate to see any other part of the country suffer, the natural outworking of economic forces must and should bring to these people, who are loyal Americans, better conditions of living than they now have.

Mr. Charles W. Boyce: This is one of the most interesting discussions of the possibilities of newsprint production in the South that I have ever heard. Incidentally, it is probably the sanest. I want to compliment the speakers that have taken part.

I am chiefly interested in the difference between two figures that Mr. Kellogg has placed here on the board, between the total available capacity for newsprint production and the practical capacity. The reason why the paper industry as a whole is interested in these figures is that they indicate capacity that will undoubtedly be used in the manufacture of grades other than newsprint.

There are four chief raw materials for paper manufacture. From them some thousand different grades of paper are produced. There are two principal types of machines upon which all of these

grades of paper are made. Obviously there is a flow in the industry, called "grade shifting," which transmits from one division to all others competitive influences that develop within any one division. The paper industry is still, for instance, in the process of absorbing capacity that became uneconomic in newsprint production when the newsprint tariff was removed in 1913.

The paper industry, including both primary and secondary products, represents a capital investment of around two billion dollars. Its annual products are sold for approximately two billion dollars in normal times. The industry supports in the neighborhood of 200,000 workers, exclusive of wage earners employed in the production and assembly of raw materials. The industry is distributed among 37 states. It owns approximately twenty million acres of forest land, and it controls through its purchases from ten to fifteen million acres in addition.

These values, significant in the American economic structure, indicate the importance to the industry of the conditions that were discussed by Mr. Kellogg. Incidentally, also, they indicate that the industry is important in respect to the whole forestry movement in the United States.

Both Mr. Kellogg and Mr. Rothery have emphasized the international character of competition in the newsprint and pulp fields. Both newsprint and pulp are duty free, and this condition has a far-reaching influence upon the industry as a whole.

In passing, I would like to say a word concerning the pulp situation. The tonnage grades of paper such as newsprint, wrapping paper, boards, etc., are produced upon a mass production basis and largely in integrated mills. Operating margins are narrow, so narrow in fact that the mere additional cost of putting dry pulp back into slush form compar-

able to the form in which it comes from a pulp mill in an integrated operation is usually too much to permit competition in these grades by mills that depend upon purchased pulp.

On the other hand, the mills that purchase pulp are largely producers of specialty papers. They must have a large variety of pulps of different qualities. Few integrated mills can produce a sufficiently broad range of pulps to permit extensive production in the specialty field.

The peculiar form of growth in the industry is related to this problem and to the newsprint situation. The industry grows from three principal bases—newsprint, kraft paper, and board. For this consideration we may eliminate growth from the board base because its relation to the newsprint field is remote.

Expansion in newsprint ordinarily forces the weaker mills to shift to higher grades of production, to groundwood papers, to book and writing, etc. These shifts are usually in the mills that have the slower, narrower machines. They are necessary in order that a higher realization upon resources can be secured.

The same is true in the kraft industry. But here expansion has affected chiefly mills that formerly manufactured sulphite wrapping papers. Many of these mills have been forced to shift to other types of production.

Shifts are also occasioned when prices of materials, for instance the price of pulpwood delivered to the mill, rises beyond the competitive point because of high stumpage prices, long freight hauls, or other reasons; then shifting to higher grades permits the payment of higher wood costs. Frequently in this shifting pulp production is discontinued and the mill shifts to purchased pulp.

These and other related facts indicate that the present importations of newsprint and pulp are not without economic

reason, or that they necessarily represent a chance for expansion in the domestic industry, for expansion in either newsprint or pulp must be considered from a world point of view. The addition of a new mill in Finland, for instance, will affect the American market in much the same manner as a new domestic mill, not only in the product for which it was designed but in the industry as a whole. For these reasons the paper industry does not wish to see expansion undertaken before the market is ready to absorb the greater output.

The present situation is a case in point. Mr. Kellogg has shown that American newsprint production is decreasing, that it is now in point of tonnage on a comparable level with that of 1904. The overall capacity of the newsprint mills in the United States has not decreased; they are shifting into the production of other grades and they will continue to shift so long as newsprint production remains unprofitable. If the optimistic prophecies concerning newsprint production are proven in fact, then past shifting is nothing compared with that of the future. Not only will imports be displaced, but the whole industry is likely to be seriously affected, with consequent destruction of values, impoverishment of communities, and devastation of forest lands.

There is a great difference between Canada and the United States in respect to shifting. Canadian mills cannot easily shift to other types of production, for paper consumption other than newsprint in Canada is relatively small and all important world markets are tariff protected; Canadian capacity must remain in newsprint, for it has no other outlet. Newsprint is Canada's largest industry; it will not be allowed to die without a desperate struggle.

This whole situation is aggravated by the fact that overhead charges in paper manufacture are extremely high. No

other major industry in the United States has such a low rate of turnover as the paper industry, which is approximately once in two years. This means that rates of operation are extremely important and that costs rise rapidly in part time operation. If the industry is to maintain a position by which it can meet American demand and meet the influences of competition from imports, it must have a fair balance between capacity and production. The percentage of idle capacity in the continental industry today is too great for economical overall operation.

I have no doubt, and I believe that few in the industry have doubt, that eventually there will be a considerable expansion of paper manufacture in the South and in the West Coast region. In these regions pulpwood is available, and at reasonable prices. I believe, however, that there will be a balance between wood prices in the different regions that will offset to a large extent present apparently wide spreads. The balancing process is well under way, for prices in the high cost regions have decreased substantially. Average prices in the Lake states, that in 1929 were three times those in the South, are today but little more than twice the latter.

What does this mean in regional competition in the rail markets? The freight rate per ton of paper from the far South to Chicago, for instance, is approximately \$9 per ton. Pulpwood prices in the South, as indicated by Mr. Demmon, are likely to settle around \$5 per cord—with which we may or may not agree. The freight rate from the Wisconsin mills into Chicago is approximately \$3.50 per ton of paper. Subtracting \$3.50 from the combined freight and pulpwood cost in the South leaves a margin of over \$10 for Wisconsin mills, much of which can go for pulpwood. Similar balances will be reached in respect to all regions that are large competitors in the common mar-

kets. The extremely wide spreads between regional pulpwood costs that existed before the depression are gone, and they will not return. New regional expansion must be carefully considered from this point of view.

Because of the high ratio of investment in plants and equipment in paper manufacture, the industry has looked upon forest management in a far different light than most other wood-using industries. In fact the paper and pulp industry has made more progress in the voluntary adoption of forest management policies than any other wood-using industry. The maintenance of forest properties that are already under some form of management depends upon the maintenance of values, and they, in turn, depend upon maintaining a reasonable balance between new capacity and consumption requirements. It is in the public interest that the development of one region is not made at the expense of others. In so far as forestry is concerned, the public is obligated to those companies that have already invested large sums in the maintenance of their properties. It is not in the public interest to encourage new production un-

til such production can be absorbed without setting up destructive competition that is bound to devastate values—and this despite the fact that large imports are now required.

The industry fears over-development for it has had bitter experience with its effects. The Canadian expansion of newsprint production was carried beyond consumption requirements. In fact, the southern kraft industry developed so rapidly that the competitive results were highly destructive for a period of years. The industry knows that idle capacity must be absorbed before expansion can be safely undertaken. It is for this reason that the industry views with apprehension the development of the newsprint industry in the South before there is a need for its production to meet consumption requirements.

At this point the discussion was closed and the Report of the Committee to Improve Forest Practices was called for. The report will be found in the portion of the PROCEEDINGS devoted to committee reports. Following its reception, the session adjourned.

MONDAY AFTERNOON SESSION, JANUARY 27, 1936

Subject: REGIONAL OBJECTIVES AND SUSTAINED YIELD

Chairman: GORDON MARCKWORTH

Chairman Marckworth: Last year a good deal of the discussion dealt with sustained yield under the Lumber Code. A lot has happened since that meeting. However, much that was done in connection with the Code has remained in force, and certainly a great deal of interest has been aroused. This afternoon we are to discuss regional objectives and sustained yield. We in the South feel that we have a great deal of private forestry, as well as of forest lands; and we believe that the future of the South hinges largely on private forestry.

The Chairman then called for the presentation of the following paper:

CONDITIONS CONFRONTING THE PRIVATE TIMBERLAND OWNERS IN THE PRINCIPAL FOREST REGIONS

By R. B. GOODMAN

Marinette, Wisconsin

EVEN the most ardent public forest expansionists believe that private ownership has a substantial place in a nationally obtainable sustained yield forestry. Yet no thoughtful and informed forester believes that all private timberland owners in any region should adopt sustained yield management, nor that all potential forest land is adaptable to such management, or in fact to any management.

In every state, including some once considered treeless, there are some industrial owners who are successfully practicing intensive forest management, and others who are or could be placed in a position to do so. The subsidy, cooperation, and guidance which such timberland owners deserve is a matter of controversy wherever foresters and timberland owners gather. Out of such discussions there cannot fail to come a better understanding, which will be translated into better laws and better forest practices.

Many years of experience in forest industry impress me with the need of an

enlightened public policy toward private initiative in forest management. The basic elements of such a policy are: forest protection, taxation, enhancement, surplus and exhaustion, stabilization, and multiple value.

FOREST PROTECTION

The three phases of forest protection are prevention, detection, and suppression. In every forest state, education has progressed in conservation consciousness, particularly as to public carelessness in the innumerable ways such carelessness causes forest fires. There is an increasing observance of slash disposal and brush burning regulations. This fight is never-ending. We have increasing hazards arising from more highways, more travel, more transient occupation of forest lands.

There is more emphasis on and elaboration in the technique of fire detection—more lookouts, telephone lines, emergency patrols, and generally the readiness to spend money for detection in order to

decrease the cost of suppression. In many forest states there has been outstanding progress in the mechanical equipment and the definite organization of suppression forces.

Forest fire records indicate so marked a decrease in number of fires and area burned, in the last five years, that further progress in every region is assured. This progress is a tribute to the principle of federal subsidy based on merit, as exemplified in the Clarke-McNary Act. I know of no federal appropriation more economically justified.

FOREST TAXATION

Forest protection and appropriate forest taxation are the classic conditions precedent to sustained yield forest management. Any tax exemption creates heavier burdens on non-exempted property, unless by means of the exemption, additional sources of tax revenue are brought into being. The exemption of timberland is justified by the tax revenue derived from the forest industries, which would not exist if the forest resources were not conserved.

Nominal annual acreage taxes with a severance tax have been adopted in several states. Some states with a surplus of timber are asking for federal loans that will enable them to await the severance tax revenue. Such claims might be excusable in states facing a long waiting period for the development of merchantable stands; but bearing in mind the competitive situation of the forest states, I doubt if such claims to federal aid will bear analysis.

Appropriate forest taxation has not been accomplished by any state to a degree sufficient to induce a majority of its private timberland owners to practice sustained yield. Neither the states nor the federal government have made any attempt to exempt managed timberlands

from taxes imposed for probate or inheritance. The tree is the ultimate unit of sustained yield. Its cycle of life for sawtimber may be one hundred years. Nearly all industrial ownerships that are in a position to undertake sustained yield are of necessity large holdings, and these are usually in the ownership of a small group or even of a family. These timberland owners must also possess heavy investments in conversion plants and working capital. In their desire to maintain continuity of the self-denying spirit of sustained yield management, they are almost compelled to devise their timberlands en bloc to their direct descendants. Their individual tree is therefore subject to high estate inheritance tax rates. On the average these taxes are imposed three times upon the life of the tree as it grows to maturity, and these taxes aggregate approximately five times the severance taxes now imposed by the states. Yet there is the same justification for exempting properly managed timberlands from estate and inheritance tax as for the exemption of these lands from annual property tax.

There is another important aspect to forest taxation. As the states generally impose severance tax laws, each state will share financially in the realization of its timber owners, and naturally it will interest itself in promoting and expanding its local forest industries. This will give rise to intense competition between states and will place *all* states in a critical attitude toward the disposal of timber in federal forests.

ENHANCEMENT

Without prospects of continually increasing stumpage values, private industrial timberland ownership would have been limited to the holding of timber immediately tributary to the sawmill operation. This we now call a working circle. For many years the enhancement of the

stumpage paid the taxes and interest charges. Advancing stumpage prices were the result of our expanding frontiers and our rapid industrial development. Added to this was apprehension of timber exhaustion. Our agricultural expansion ceased about 1920, and the trend of lumber use is now declining. Substitution of other materials for forest products seems an unending process. Timber exhaustion has been approached only in certain forest species, and there is a growing tendency for substitution in their use. More valuable species are being replaced by more plentiful, cheaper woods. The findings of the Forest Survey, as they are released, are indicative of an equilibrium between forest drain and forest productivity; and with better methods of forest protection, better utilization, and progress in both extensive and intensive silviculture, there appears now a prospective excess of productivity over drain. Research and trade extension are vitally necessary to maintain the existing markets for lumber and timber products. It is not probable that these markets can be expanded to meet the prospective increase in forest productivity. This means a long-time trend of declining stumpage values in every forest region. *This is the objective of public forestry.* Every forest state desires to insure the continuance of its forest industries. The prospect of a future, nearby, abundant, and relatively cheap raw wood supply is in the interest of local community stabilization.

The elimination of enhancement as an element in forest finance, however, is by no means fatal to private timber ownership. There is a surplus of land. There are accessible areas of good forest soil which can be put to no other profitable use than the growing of trees. The practice of even the minimum requirements—fire protection and care of young timber—may insure a growing crop able to liquidate reasonable carrying charges.

The prolonging of the life of large capital investments in conversion facilities makes possible a saving in depreciation often in excess of the cost of growing a future timber supply.

SURPLUS AND EXHAUSTION

The forests are the raw material of forest industry, and the private timberland owner is concerned with the supply-demand relations of the present and prospective available timber stand and the current and prospective demand for timber products. Erroneous estimates of this relationship in the past developed the timber exhaustion theory. The relation of raw wood supply to demand, according to the Copeland Report, varies in the forest regions from a stand of six or seven times the annual drain in the Central and South cut-over regions to a ratio of 54 in the Pacific Coast, 58 in the North Rocky Mountain, and 200 in the South Rocky Mountain regions. The ratio of drain to growth in the Copeland Report varies from 28.7 in the Lake region to 1.9 in the Middle Atlantic and 1.7 in the South Rocky Mountain. What is true of these variations for regions is more pronounced for localities and working circles.

Clarification of regional and individual forest policy will be possible when the work of the national Timber Survey has been completed and its findings made available. In the deficit regions, the conversion plants and the local communities which they support are confronted with the exhaustion of their raw material, to be followed by a difficult waiting period which may involve plant and townsite abandonment. In contrast to this situation, we find in regions of surplus timber a new and disturbing form of tax delinquency. Millions of acres of once valuable merchantable timber are becoming permanently tax delinquent.

In this connection, Forester Silcox recently said:

"Our national resources must be restored region by region, each according to its natural heritage. We cannot say to the Lake States region, for instance, that inasmuch as timber can be grown more quickly and cheaply in the Southeast or Northwest, you should neglect your own forest resources and become economically dependent upon other parts of the country."

STABILIZATION

The mechanization of industry is not the cause of the widespread unemployment we have been and still are so much concerned about. It has, however, greatly accentuated the intensity and duration of prosperity and depression phases of the business cycle. This has especial significance to the forest industry, which, in its effort to adjust itself to cyclic changes, tends toward over-liquidating in periods of expansion; individual owners prefer cutting out when there is an opportunity to do so, rather than to face the problem of holding their timber over a long period of depression. Hence their reluctance to adopt the continuous commitment in forest capital inherent in sustained yield management.

To remedy this, proponents of forest conservation in private ownership have sought to develop methods of stabilizing the forest industries. These industries are almost as widely dispersed as agriculture, and any system of effective stabilization must be based upon governmental enforcement of regulations for timber cutting, both as to quota and methods. If the federal government is barred from direct jurisdiction by constitutional limitations, it is proposed to accomplish this indirectly by means of federal aids, and the forest industries are prolific with resolutions advocating such a policy. It is

obvious, however, that forest industries are inter-dependent with all industries and that stabilization cannot be accomplished for them independently of all industries. Stabilization implies a nationally planned economy. The lure of federal aids and the hope of a stabilized market are strong incentives, but it is a question whether or not they will offset misgivings as to the effectiveness of centralized bureaucratic control.

MULTIPLE VALUE

Before this audience I do not need to elaborate the familiar category of multiple purpose forestry, from soil and water to wildlife, recreation, the social importance of decentralized industrial employment, and a diffused local tax base. Forestry has been said to be profitable for everyone except the owner.

For the past two centuries the private timberland owner has been harvesting a crop he did not plant. Stumpage values were continually rising. The state and local governments quite justifiably taxed away the owners' unearned increment. Gradually these local governments began to vision the prospective loss of their forest industries; diminishing forests were found to be diminishing payrolls. With the diminishing forests came the depletion and exhaustion of wildlife, disastrous floods, and equally disastrous droughts and dust storms. The social and the money value of recreation, which rivals the social and money value of forest industries, is also dependent upon forest conservation. Our attitude toward the forests in the past decade has largely changed from public and private exploitation to an increasing appreciation of their public value.

The relation between these public values and the declining realizations of the private timber owner varies little in the different forest regions. There are criti-

cal areas of watershed protection, of wildlife propagation, and recreational needs; but all areas are critical for industrial forestry. The ratio of social value to profit motive is substantial. It may, if you are socially-minded, be put at 90 per cent public value to 10 per cent private value. Because this is true, it follows that in all equity and fairness this ratio, expressed in tangible terms of public cooperation in forest protection, forest taxation, and the protection and expansion of forest product markets, and in conciliatory rather than regulatory legislation, is *the measure* of the treatment that the states and the federal government owe to the private timberland owner who meets his public responsibilities in forest management.

In all this, I urge that we cease to dwell on past iniquities on either side, hoping to settle old scores with those long dead. Instead, I urge that we endeavor, without prejudice, to build reasonably for the future.

Chairman Marckworth: Mr. Heintzleman's paper on what should be substituted for Article X will be read by Mr. Perkins Coville.

Mr. Perkins Coville: Article X recognized the desirability of forest conservation, and stipulated that the Secretary of Agriculture would call a conservation conference to undertake the formulation

of specific measures toward that objective. The conference was held, and later a second. Schedule C was prepared to bring about a certain amount of correlation of the practical rules for the different forest regions of the country, and for specific types; and from those were later developed the more definite and specific rules put into effect by the different associations which acted as sub-divisions of the Lumber Code Authority, and had the responsibility of carrying out the rules.

The various sub-divisional agencies put into the field something like 18 technical men, to see that these measures were put into effect, and the Forest Service put on a somewhat comparable number of men to assist in any way possible. The conference also resulted in a joint committee of forest conservation, on which were six public representatives and six private representatives. That committee is still in existence. Ten, or perhaps eleven, regional sub-divisional agencies had actual rules of forest practice approved and in effect at the time the Supreme Court put the quietus on the N.R.A. The Divisional Agencies have kept on a considerable proportion of those men, and the Forest Service has also kept on practically all its technical men, with the idea of cooperation so far as possible and trying to hold the gains that had been made under the Code. This leads up to the subject matter which is dealt with in the following paper.

SUBSTITUTE FOR ARTICLE X

BY B. F. HEINTZLEMAN
U. S. Forest Service

THE disappearance of N.R.A. and the Lumber Code has eliminated a promising method of obtaining, over a period of years, a nation-wide application of sound forest management on private lands. We are now back where we

were before the Code was adopted except that the lumbermen throughout the country, as well as the professional foresters, have a better conception of the elements of the problem as a result of the forestry conferences and activities under the Code.

The Supreme Court decisions in the N.R.A. and the A.A.A. cases apparently leave little ground on which to base any mandatory federal legislation to control private forestry practices. The indicated future course is to stimulate individual effort and voluntary cooperation among land owners; encourage state governments to provide by law for the observance of such minimum rules of forest practice as will assure the continuance of the forest productivity and to extend state aid to the private owner as a partial offset to this requirement; finally, to provide greater federal aid to private owners and the state forestry agencies in the promotion of their forestry activities.

Four-fifths of the commercial area and nine-tenths of the potential growing capacity of the forest lands of the country are now in private ownership. Granting a greatly enlarged program of acquisition for national and state forests, the great bulk of the better forest areas will almost certainly remain in private hands; and any well-rounded program of forestry for the Nation must give careful consideration to means for bringing about the proper management of these lands. This is the crux of our forestry problem, and the federal and state agencies should give the encouragement of private land forestry a high place in their programs of activities. At present the tendency is to put a disproportionately large amount of effort on the smaller, less productive area which is in public ownership.

It is undoubtedly true, with some exceptions, that large-scale private industrial forestry operations in this country in their typical form are not now justifiable on a profit basis, due to the existing economic conditions, faulty timberland tax systems, and other drawbacks. The burden of maintaining the timber supply for a sustained operation is usually too great for the owners of such operations to assume. The public recognizes this, and

on the basis of the public interest involved is willing to assist private effort toward forest conservation. The federal Weeks law and Clarke-McNary act as well as statutes of many states are indications of this public realization of a public interest and public obligation in private forestry projects. The time has arrived, in my opinion, to go further in offers of public cooperation. In fact, as regards those minimum forest practices deemed essential to prevent devastation, I visualize a situation such that any recalcitrant owners who refuse to participate in a cooperative public-private undertaking embracing a majority of the local private owners might well be compelled to join by appropriate state laws, where state constitutions permit.

BETTER PROTECTION AND SILVICULTURAL PRACTICES. STATE FOREST CONSERVATION CODES

The regional rules of forest practice established under Article X of the Lumber Code constituted, it is true, merely a beginning in forestry effort. However, they were essential forestry requirements and their full application would preclude further forest devastation. I think the setting up of such simple but fundamental rules was a logical first step toward orderly private forestry management, and that similar rules should be established under state sanction—the states, though not the federal government, apparently having the legal right to take such action. Such restrictions cannot be set up arbitrarily, but must be authorized by the state legislature. Where this authority is obtainable it should be possible to secure reasonable compliance without excessive cost. Also, to make the rules most effective the forest owners directly concerned should be given a voice in their administration.

I think an effort should be made, start-

ing in the most important forest regions, to have the several states enact laws empowering the state forestry agency to establish, with the consent of the appropriate county officials or a majority of the local forest owners, Forest Practice Districts comprising individual counties or groups of counties. The state law would provide a master code or set of guiding principles to govern the required forestry activities in these Districts. This State Forest Conservation Code would contain only general provisions similar in scope to Article X. It would provide for the formulation and application of locally appropriate Forest Practice Rules for each of the Districts that might be established from time to time under the law, and give such rules the status of state laws. The direction and enforcement of the District rules should be lodged in the state forestry agency. District Forest Practice Committees, composed of elected local forest landowners, should be provided to serve as an advisory agency to the state forester in the formulation and application of the rules.

The question immediately arises as to the means by which early and wide-spread action is to be obtained toward the enactment of the state law and code and, thereafter, toward the formation of Forest Practice Districts embracing counties or groups of counties. The offer of financial aid and work cooperation by the federal and state governments in the administration of such state and local programs must constitute the main driving force in this, but there must also be an intensive educational effort by the public forestry agencies, lumber trade associations, forest schools, land planning boards, rural zoning organizations, and popular forestry promotion associations.

The C.C.C. is now about to be set up as a permanent force. In the interest of doing the most good for the forestry effort in the United States as a whole, I

believe a large share of the C.C.C. work should be placed on private forest lands, as these comprise most of our good timber growing sites. This would require new legislation. In view of the vast amount of C.C.C. labor that could be made available for work on such lands, the federal government might well require something from the state and the private owner as a partial offset to the federal contribution. A logical and valuable offset would consist of the establishment of a master Forest Conservation Code for the state and the formation of Forest Practice Districts in the localities where E.C.W. activities on private lands are to be conducted. In other words, before the federal government would authorize C.C.C. camps for forest work on private lands in the state, a State Forest Conservation Code would have to be established, and private land camps would be placed only in those sections of the state in which the majority of landowners had agreed to the formation of a Forest Practice District under state direction. The E.C.W. activities on private lands within the District would be of a character (and I think this is fundamental as a matter of equity and probably of legality) that tends to aid the landowners as a whole rather than individually. The program would cover such things as the building of systems of utilization roads in each locality to permit of more profitable selective logging; establishment of fire protection improvements, such as roads, trails, telephone lines, lookout towers, etc.; and having the C.C.C. personnel act as reserve forces in fire suppression work. Without doubt these activities would well repay the owners for the small expense incurred in applying the protective and silvicultural measures required under the forest practice rules.

The United States Forest Service should assist the state financially in the administration of the Forest Practice Districts

from any funds obtained for commercial forestry extension under the proposed Omnibus Forestry Bill or other federal statutes.

The drive toward better silvicultural practices which was initiated by the Forest Practice Committees and foresters of the Lumber Code and later taken over by the trade association agencies offers good possibilities for gaining ground in forestry, and could be expanded to great advantage. It can best be carried forward as a cooperative project by the trade association foresters, state foresters, Forest Service, and forest schools. The project covers studies, educational campaigns, and demonstrations in improved practices in such matters as selective logging and other methods of cutting, brush disposal, leaving seed trees, protection of advance reproduction and young growth in logging operations, improvement cuttings, and thinnings.

ENCOURAGEMENT OF SUSTAINED-YIELD FORESTRY

While the attempt to obtain a widespread application of better protection and silvicultural practices is the logical first step in a program of forestry for the private lands of the country, intensive work is also needed at this time to further the adoption by private interests of the sustained-yield principle in management, the final objective of the program.

As a start on this project, a preliminary survey of inventory should be made of the timber supply and utilization conditions in the forest industry communities. Following this, the establishment of sustained-yield units should be encouraged among the private owners in the individual communities, starting with those localities where conditions are favorable and the landowners and the public are most interested in the project.

The work calls for studies of all lands, plants, and operations that might be brought under one management plan. One or any number of private holdings may be involved, as well as lands now owned or that might have to be acquired by the federal or state governments, or even private owners, to effect an economic set-up in timber ownership. Within each locality where the survey and analysis show that possibilities exist for the establishment of a sound management unit, the landowners should be urged to accept the idea and go ahead with the preparation and adoption of the detailed management plan. The Forest Service might well take the leadership in this class of forest extension activity.

Forest management extension work should also include encouragement, advice, and field assistance to groups of small land owners in the formation of cooperative associations for the marketing of forest products where this activity is now, or may later be, combined with improved silvicultural and protection practices. These results will in themselves justify the cost of extension work required, and, in addition, the association efforts may eventually lead to some form of joint sustained-yield management. The Forest Service, State Forester, and extension foresters should participate in this undertaking.

One of the greatest deterrents to private land sustained-yield management is the heavy carrying charge on timber holdings, and federal and state programs of land acquisition should definitely include the purchase of lands to supplement private holdings where such action is needed to effect the establishment of sustained-yield units for the support of forest communities. I suppose these acquisitions normally should cover the lands which are in weak financial ownership; they should be joined for management purposes to the holdings of a

number rather than one operating company, and be sufficiently large to permit of a reasonable cost of general forest administration. Broad public support can doubtless be obtained for public participation in sustained-yield enterprises which embrace most of the public and private forest lands tributary to a town having a number and variety of wood-using enterprises. In situations where there is but one private owner with whom the public agencies can cooperate, the establishment of a joint management unit may often prove to be a difficult undertaking.

The extension of forest credits to private landowners provided for in the pending Fletcher Bill will provide a method of reducing the carrying charges on private timber holdings, and should stimulate the adoption of sustained-yield plans. Loans or credits now obtainable from the Reconstruction Finance Corporation can contribute in somewhat the same way to this end.

Needless to state, a more equitable system of timberland taxation would immeasurably improve the chances for increased sustained-yield management. The land planning bodies of the several states are the logical agencies to assume the leadership in attempts to bring about needed changes in the existing state tax laws.

MARKET EXTENSION

Hand in hand with the efforts to promote better forestry on private lands should proceed a well-planned program to extend the utilization of forest products. A large, varied, and steady market for wood is obviously in the public interest. An extensive timber industry as a supplement to agriculture helps to maintain

the well-being of our rural population. Again, commercially productive forests relieve the public of a great financial burden which otherwise it would have to assume in maintaining a forest cover of some sort to regulate streams, prevent excessive soil erosion, and provide the recreational facilities which the public is demanding in increasing measure every year.

Land in private ownership can continue to supply these public benefits only if given reasonable assurance of paying markets for timber products. But our consumption of wood has been steadily decreasing for many years, while the potential growing power of the country is very large. The decrease in consumption is naturally leading to an increase in land abandonment, and unless these tendencies can be reversed the economic and land-use problems of the forest districts will eventually be extremely burdensome.

The active and sustained campaign of market extension which is needed should obviously be conducted and financed, largely, by the timber industries. The public effort should consist of an enlarged program of scientific research in wood products by the Madison Laboratory, broad studies of economic conditions and trends in the industry, and the carrying out of investigations designed to develop new and more efficient methods of logging, manufacture, and distribution.

The Chair then called upon Prof. Len-thal Wyman, of the North Carolina State College, to read the following paper, submitted by Dr. F. P. Veitch, Chief of the Naval Stores Division, Bureau of Chemistry and Soils, U. S. Department of Agriculture.

THE NAVAL STORES INDUSTRY

By F. P. VEITCH

THE farm and forest activity which for the past fifty years has been generally spoken of as "The Naval Stores Industry" consists in harvesting turpentine oleoresin, or "gum," as it is called in the South, and separating it into its chief constituents—turpentine and rosin.

This activity apparently had its origin in the Western Hemisphere in Nova Scotia, in 1606. By 1609 it had spread to Jamestown in Virginia, and somewhat later it spread to New England. By 1709 "turpentine farming" was a vital part of the plantation activities of the colony of North Carolina. North Carolina produced more than 90 per cent of the naval stores up to 1860, and in 1870 it produced about 70 per cent. By 1840 the industry had begun to spread slowly and successively to South Carolina, Georgia, Alabama, Florida, Mississippi, Louisiana, and Texas. In 1870 a small production was reported from Missouri. Having stripped the western sections of their turpentine producing pines, producers in recent years have returned to North Carolina, South Carolina, Florida, and Georgia, and are working over the ground they worked forty or more years ago. Many of the older operators you meet came from North Carolina—they pursued the disappearing pines.

Although for four centuries turpentine and rosin have been classed as naval stores, the production of turpentine and rosin was generally known in the South as "turpentine farming" until long after the Civil War. It was chiefly a plantation industry, where each planter harvested the gum from his own timber and distilled it. The designation was changed to "naval stores industry" when a class

grew up, variously known as turpentine "producers" or "operators," who worked on a large scale on leased timber. These together with the large lumber companies who worked their great timber holdings for turpentine and rosin ahead of the saw mills, became the chief producers.

The quantity of naval stores produced annually and their values fluctuate widely within the past fifteen or sixteen years from about 340,000 units (1 barrel of turpentine and 3 1/3 500-pound barrels of rosin) and a minimum value of about \$18,000,000 to approximately 650,000 units and a maximum value of about \$65,000,000. The smallest crop did not yield the lowest total income, nor did the biggest crop yield the largest total income. The average crop over this period has been close to 500,000 units, and the average annual value has been about \$40,000,000. To these figures must be added about 10,000 to 90,000 barrels of turpentine and about 52,000 to 467,000 round barrels of rosin produced by the makers of wood turpentine and wood rosin from dead wood and stumps, an activity that has developed during the past 30 years and is still growing.

The naval stores producing industry pays in wages and salaries on the average about \$15,000,000 and employs directly more than 50,000 people. It is a major contributor to the general business of the naval stores producing states. As a farm activity it ranks sixth or seventh in the naval stores producing states, and eleventh to fourteenth in the whole country.

This activity, which developed as "turpentine farming" and expanded into the "naval stores industry," very much after the manner in which other farming spe-

culties have come to be known as the "cattle industry" or the "dairy industry" or the "lumber industry," as the case may be, is of much greater economic importance to the country than the value of its products, the capital invested, or the people directly employed would indicate. Especially is this true of the regrowth of pine in the South, where there is a vast acreage of lands not needed or not suitable for other types of farming, and which often come into the possession of the state because they do not return to the owner enough income to pay taxes. The acreage that has been taken over in the turpentine states and thus removed from the tax books, I understand, is almost unbelievable. If these lands can be made to yield a profitable annual income from the growing of timber, more of our people will find profitable employment and at the same time the income from other types of farming will be greater and more nearly commensurate with the effort and capital given to them.

In a rational plan for the sustained production of pine timber, naval stores production plays a large and necessary part. It supplies another product to be added to pulpwood, fuel wood, wood for the production of chemicals of various kinds, and the chief product—lumber. These together promise to provide a profitable use for the marginal and excess lands, healthful, happy employment, and ready, dependable supplies of needed raw materials for several world-wide industries, not the least of which are those making paint, varnish, soap, paper, and pulps.

It is not my purpose to burden you with a discussion of the purely forestry features of pine growing; others can do this infinitely better than I can. I want, however, to call attention to the interesting and important fact that, whether our primary purpose is to grow pulpwood or lumber or to produce naval stores and

pine chemicals, we have here the opportunity to rival the pork packers who are credited with "utilizing everything but the squeal," through the production of pulpwood, poles, piles and cross ties, naval stores, fuel, and chemical wood and lumber. Not even the stumps escape, and possibly we may yet find a profitable use for at least some of the pine needles!

It is this combination of uses—the production of a number of different and needed products—that makes feasible, it seems to me, the economic reforestation of our southern marginal and excess lands. The waste of the greater part of the tree has been an outstanding characteristic of the lumber activities in this country—more has been wasted than has been used; not more in value necessarily, but more in quantity. This is true of practically all farm crops. The by-products from corn, cotton, wheat, etc., are of greater volume than are the products for which the crops are grown. A combination of uses, a plan to utilize profitably all but the "squeal," is of particular interest to us of the Bureau of Chemistry and Soils. It is a matter we have been working on for more than fifty years, on which much has been accomplished. Research along these lines is still one of the major activities of the Bureau. In 1912 we issued a bulletin pointing out how naval stores products and paper-making can be coordinated, and this is actually being done here in the South and should be done more extensively. The South will not only continue to be the naval stores source of the country, but there is reason to think that in the future it will be the major source of lumber and paper, and also an important section from the standpoint of cattle raising. With the elimination of the cattle tick fast approaching, thanks to the sustained efforts of the Bureau of Animal Industry, cattle raising may well prove to be an important

element in the sustained pine forestry in the South.

Now naval stores, both gum and wood, are necessary items in the success of this conception—they bear a major part of the production or growing costs, and they yield an annual income until the last stump is converted into wood turpentine, wood rosin, pine oil, and building board or fuel.

I want to call attention to the increase in "turpentine farming" as opposed to the "naval stores industry." For the past five or six years we have realized that an increasing number of those engaged in general farming have been gathering gum from the pines on their own farms. We had no idea, however, how many small farmers were doing this, nor how large a percentage of the total production of turpentine and rosin was produced from gum from such sources until the Control Committee of the Gum Turpentine and Gum Rosin Processors Marketing Agreement found that there were about 12,000 of these gum-collecting farmers and that they were responsible for from 12 to 18 per cent of the total production of gum naval stores. These facts have been confirmed by the survey made by Captain Eldredge of the Forest Service. How many farmers will work the trees on their own places this year we do not know; some have estimated that the number and the products will be doubled.

To my mind this is a consummation much to be desired. I have hoped for it for twenty years. It puts the money where it should be—in the pockets of the general farmer. It gives him another crop. More important by far, it gives him a week-to-week cash crop comparable with milk or eggs. It gives him a steady income throughout the year while his other crops that must be planted, cultivated, and harvested once a year are growing and being prepared for market. It has kept these farmers out of the bread line

during the recent stress, and most important of all, has enabled them to retain their independence and self respect. I hope that this, which seems to me to be a natural trend, will continue. I think it will insure a more equitable distribution of the returns from naval stores production and tend to stabilize production in closer balance with consumption, because when stocks are so great as to make production unprofitable, the farmer can quit. The naval stores producer working lease timber often cannot afford to do so—he often loses less by working than by letting the timber remain idle.

This, then, is the producing side of the picture as I see it. It is not the only side, however. There is the consumer side. We, all of us, are the consumers and need turpentine and rosin every day although they may come to us in forms in which we do not immediately recognize them. They are valuable and necessary raw materials used in the production of paints, varnishes, soaps, paper, printing inks, foundry work, medicines, camphor plastics, synthetic resins, and a hundred and one minor products. These things would cost us more if it were not for naval stores. Rosin is the cheapest raw material used in the production of synthetic resins, soaps, plastics, and varnishes, and is highly regarded as a component even of some toilet soaps. Nothing compares with it for sizing paper except animal glue, which costs three or four times as much. Turpentine is regarded by paint and varnish makers as a "food proof" thinner, and the user of these products is usually advised to thin them with turpentine in order to avoid trouble. The second largest use of turpentine is in making polishes. It is the raw material in the increasing American production of camphor, which we use in great quantities and for which we are still largely dependent on foreign supplies.

Roughly, half the turpentine and rosin

duced in this country is exported, and constitutes the largest item in the class designated "chemicals."

Now in the growing of pines and production of turpentine as a southern farm crop and the utilization of all the products, what are we going to do with all the turpentine and rosin that such a program promises—probably several times as much as is now profitably disposed of for established uses? In solving one problem we often run into another. In developing rayon we decrease the market for cotton and silk. If we make paper boards from straw or cornstalks we decrease the market for pulpwood and lumber. The substitution of the tractor and the motor for the horse has more than halved the number of horses used, and thus has reduced the quantity of corn, oats, and hay needed for their food and the hide and tanning materials used in making harness for them.

Likewise, increasing the production of naval stores has given rise to the problem of increasing the uses for turpentine and rosin. This big problem is one of those which we in the Bureau of Chemistry and Soils are working. We are trying to solve this problem by research on the fundamental chemistry of naval stores; separating, identifying, and modifying their components as a prerequisite to their further industrial development; and technological and engineering research to present and new uses, with especial reference to the better adaptation of these products to industrial use. In addition, production studies are being carried on at the Naval Stores Station at Olustee, Florida, in cooperation with the Forest Service. Here methods and equipment of production are being studied in order to develop the best products, to devise the best and most economical processes and equipment, and to eliminate waste in order that suitable naval stores products may be made available to consuming in-

dustries at the lowest cost compatible with an equitable return to their producers. The last object is our primary purpose. Agriculture all too often receives too small a share of the consumer's dollar.

It must not be assumed from the foregoing that the production of naval stores has always been profitable to the producers, or that any plan of forest utilization of which the production of naval stores is an important item will always be profitable. Naval stores production has always been an exceptionally up and down business, as indicated by a variation of more than 100 per cent in volume and 300 per cent in value over the past fifteen years. These variations, which are not uncommon for farm crops, emphasize in the most striking manner the need for organization among farmers, with the primary object of correlating production with demand, and for the receipt of stabilized returns for these products. The naval stores industry has attempted such organization at least half a dozen times during the past thirty years. Those engaged in this business constitute a relatively small group, in fact one of the smaller farm groups, and it would appear that a strong, permanent organization could be built up. But several broadvisioned men have given the best years of their lives to it, with heart-breaking results. So many producers are unwilling to regulate their own production, even though there is convincing evidence of the need for regulation. This attitude is due in part, perhaps chiefly, to the lease system, which permits no flexibility but requires full payment for the four or five years covered by the lease, with no provision for delayed working to cope with unprofitable prices.

It is earnestly hoped that the naval stores business may be placed on a sound basis. The first need is a permanent organization of producers, which should em-

brace at least 90 per cent of the total production. This organization must be strong enough to balance approximately production and stocks against demand. It must develop a better system for merchandising turpentine and rosin. By this I mean greater sustained efforts to sell high quality products packed as the present day user requires. Every household in the land could advantageously use a quart or more of turpentine a year. The potential market for thinners for paint and varnish to make them ready to apply is at least three times the total quantity of turpentine used in this country today, and undoubtedly the use of rosin also can be materially increased. Such efforts on the part of the industry, coupled with the general application of the results of the Forest Service and the Bureau of Chemistry and Soils in rational forestry, fire protection, improved methods of production and equipment, elimination of wastes, and the development of new uses, may reasonably be expected to absorb increased production. The naval stores producers must choose either to organize for continuous work along these general lines or to continue along present lines, that is, making no concerted effort to help themselves, and continuing to suffer the ills to which such neglect has subjected them.

In conclusion I would like to stress these ten points:

1. Naval stores production is a very

potent factor in sustained forest utilization in the South.

2. The naval stores products yield steady income throughout the year.

3. They give the general farmer and other crop.

4. They help to decrease over-production of other farm crops.

5. They help make feasible to the general farmer the regular and continued production of other regular crops, such as fuel, pulpwood and chemical wood poles, cross ties, and lumber.

6. They supply needed raw materials to a number of important industries, not only in this country but also for export.

7. They present research problems of varied and difficult nature, especially as to the extension of their uses.

8. The Department of Agriculture through its Forest Service and the Bureau of Chemistry and Soils, is studying these problems.

9. While real progress is being made in naval stores research, naval stores problems cannot be all solved in short order—they require a long-time sustained research program, for which the necessary facilities must be available.

10. Finally, they may be considered as the key to the solution of the problem of the economic and sustained pine reforestation of the South.

Dr. Austin Cary was next called upon and presented the following paper:

COMMON SENSE IN CONSERVATION

By AUSTIN CARY

IT IS not a common thing for one man's active life to span the history of a movement as highly developed as that of forestry in this country today. Foresters should, it would seem, be long-lived by reason of the nature of their interests and occupation, and that rule

seems to be proving out with us; for the first half-dozen young Americans who committed themselves to the career more than forty years ago but one, I believe, has yet passed from us. W. W. Ashe the man to whom I refer.

But if forty-five years ago forestry is

is country was neither a business nor a career, what represented or replaced it? A lumber industry, as a matter of fact, if we will allow the association. We all know that, on one basis or another. For my part I grew up close to one section of the industry of that day, "worked in the woods" to some extent myself, and well do I remember how it was regarded. That was as a desirable occupation for working men, a commonly profitable line of business enterprise, one of the main economic mainstays of my section of country. Natural, desirable, inevitable even, it seemed to be, and my own thought in taking up with the new one, aside from personal considerations, was the practical one of introducing any ideas found in it that might be applicable to the old established interest and thereby securing plain, substantial benefits for my state and its people.

A little later, through the prosecution of technical work came acquaintance with lumbermen and lumbering in the Lake states, when the industry in that section was a little past its prime. Finally, as you know, with the passage of time and the pursuit of leadings in a career, acquaintance was gained with all the lumbering regions of the United States,—close, intimate acquaintance oftentimes, affording actual insight.

Not many have had such experience, and few here are old enough to remember the conspicuous figures in lumbering history at its height. For these reasons I feel justified and under obligation to record the impressions derived in this manner. I shall always look with admiration on those men as I remember them; have enormous respect for their labors, their devising, their assumption of risks, the enormous service they rendered in building up the country. When their memories are blackened, my strong inclination is to rise up in their defense. Their motives I defend as normal. When

the Copeland Report, as it does at one point, seems to imply that before touching the forests those men should have waited for the results of silvicultural research and perhaps for permission from some governmental authority, that seems a small view to take, to me. Mr. George S. Long, long head of the Weyerhaeuser interests in the Northwest, to my thinking said a vastly more sensible thing when he remarked about the waste involved in early lumbering that without it we wouldn't have had any Nation.

Then the idea of forestry came along, and that may be characterized briefly in the same broad fashion. The first conspicuous representative of this interest was Mr. Franklin Hough, set at the matter by the American Association for the Advancement of Science in the early 70's of last century. He antedates my own recollection, but years ago I studied his work, and to the best of my impressions and recollection it was thoroughgoing, honest and serviceable spirited. The next conspicuous figure was B. E. Fernow, of German professional training. Dr. Fernow I knew well. Along with enormous vitality and powers of work he had a self-confident and more or less domineering disposition. He knew it all; those who differed with him were utterly mistaken. That didn't, however, altogether go down among our independent minded people. Congress would only trust him so far, and I personally remember with vividness two occasions that illustrate alike his own temper and the reaction to it. One was an address he made before the American Pulp and Paper Association in New York in the winter of 1897-98, where in my hearing he told the assembled paper manufacturers that their business was on an unsound basis in respect to its raw material, a clash of minds resulting. The other was his management, backed by state funds, of a timber township in northern

New York, the fundamental idea being to change hardwood over into spruce growth through clean cutting and planting. This project he ran into such excessive expense that he had to be stopped after a year or two, while on the technical side the result, as I understand it, was to demonstrate that his fundamental plan was totally impracticable. In passing allow me, if you will, at this point to warn younger men than myself against the self-confident spirit that I have just instanced; it so happens that I can point the lesson from a recent occurrence. In a neighboring state a few years ago, a young forester was employed by a business man to look after a growing timber property. Well trained and admittedly capable he was, but in handling the people with whom he had to deal, and also in relations with his employer, he was stiff-necked, paying little regard to their ideas or interests. The employer wrote me after letting him go: "I never yet heard him say when something went wrong that it was possibly his fault." The same man continues that as a part of training his own son for life he intends 'as he grows up to tell him of mistakes he has himself made, in the hope of cultivating a habit of caution and humility.

Fernow was a telling figure in the history of forestry in this country, all right. Our first systematic educator, he wrote the text books and trained numbers of the men who later trained others, and so on down through several layers. And one specific sentence he wrote I have always felt must have had, through these channels, a powerful influence on subsequent affairs. It is the definition of the term forestry in his work on forest economics, and reads this way—"the rational treatment of forests for forest purposes."

Think of that a moment, if you will. Forests of course we start with; rational treatment is all right, but how about forest purposes? I'll say this without

qualification—that that phrase never has fallen in with my own ideas. From the start to this day, forestry to me has meant such use of forest land as promotes the interests of our people. On the other hand, I have often thought that the idea thus set up, that forests are an end in themselves, is a main reason why the interest with which we are identified has not advanced faster. It operated to paralyze men who by rights should have been united, to set up a clan in the midst of a people. The validity of this reflection I commend to your thoughtful consideration.

How next shall one go on? Apparently we are at a critical point just now, matters of vast importance pending, sure to affect importantly future living conditions of our people. My topic is common sense in conservation. To it a few other words of plain and familiar meaning seem to naturally attach—sincerity, tolerance, caution, for instance.

How first about the matter of timber supplies sufficient for the Nation's use? That is where this forestry business started, and for all the other ideas that have been grafted onto it of late, no other element in the case seems now of more consequence. It has often been alleged that industrialists have been wrong in their ideas on this general head, and that is true to an extent, but their humbleness is our side of the business that we should be concerned with.

My own recollection goes back to the summary of national forest resources conducted by Prof. Charles S. Sargent for the Census of 1880. Information was recorded for the state of Maine; into this my earliest woods work gave me considerable insight, and on the first subsequent occasion I wrote of it in rather disrespectful terms. That called out rebuke on the same plane, but somehow I never have regretted the course I followed.

Fernow tried his hand at this sort of

ning; and again, with the establishment of the Forest Service in the Department of Agriculture over thirty years ago, Mr. Pinchot set R. S. Kellogg to work on the same line of figuring. If there exists any curiosity about that last project and my own relation to it, I had much rather that Mr. Kellogg satisfy it than myself. Later, as all here know perfectly well, a series of official bulletins on the old theme of impending timber shortage has followed. With the actual out-turn of events you are familiar, know that in the broad sense these forebodings have not materialized, a fact that the burden imposed by heavy timber stocks is one of the things we hear most about today. To that very state of affairs this conservation talk contributed powerfully, through stimulation of speculation in southern and particularly in western timber. That of course was years ago, but in a late publication I recently cited an instance of the same kind, one that came very close home to me, connected with the southern naval stores industry. That of course I need not repeat, but the question arises how we ought to look at this sort of thing—I mean the professional part in it. For my part I have believed throughout that errors existed in the mathematical and technical features of the work, and particularly that a due sense of sober responsibility was not manifested. Thus when, as today, the same sort of men, and in part the very same men, who put out these former pronouncements ask this country, on the basis of their latest findings, to make enormous expenditures and largely change its habitual practice in respect to land ownership and industrial organization, to protect itself against hardship and calamity that have already been postponed so long, I for one am not prepared to follow them implicitly.

“Common sense in conservation”; that may be manifested in different ways—in the type of thinking characteristic of men

of any sort and in any place, or in that of men of ordinary type and experience as distinct from those trained and specialized. Anyhow, it seems to be up to me to develop the value of that sort of thing, and perhaps I can do it to an extent by citing a specific instance.

Forty-four years ago, in 1892, the first report of the newly installed Forest Commissioner of the state of Maine was published, an office, by the way, that was superimposed on another of long standing, that of state Land Agent. Several papers were contributed to this report. One was written by a thoughtful timber owner who noted the fact that a little change in the logging methods prevalent at the time would obviate the destruction of much growing timber. Men saw the point, and acted on it. From then on, the provision suggested was inserted in all stumpage contracts.

But three men of a different type contributed papers. One was a professor in the State University, another a retired lawyer of high class, and the third a gentleman of somewhat the same standing. Between them they mourned the passage of timberlands into private ownership; they insisted that the state ought not to overcut the yearly growth of timber, as they believed it was already doing; the question was raised if the pulp and paper industry, just then beginning to compete strongly with sawmills for timber, would be of net benefit to the state; the employment of portable mills was deprecated. Finally one of the gentlemen, having studied the writings of Fernow on the topics of annual drain and actual and possible growth in the country's forests, summed things up this way: 100,000,000 acres of heavily stocked and intensively managed forest were required to supply wood for railway construction, and several times as much for the lumber market; 100,000,000 acres were needed to grow fencing material, and 175,000,000

for fuel. The total worked out as 14 acres per capita on the national population of the time, of highly managed forest, required to supply the necessities of the American people, and Maine was called on, through resumption of public ownership, with very careful regulation of forest use, wholesale planting, etc., to assume its share of the burden involved. Sounds funny perhaps, in view of the state of things today, but that is what detached, theoretical thinking actually got men into. It seems worth while to trace in outline the course of subsequent events, which was about as follows.

Just about the time this report appeared, a man somewhere invented wire fencing; and employment of wood for that purpose pretty nearly vanished. A few years later coal began to be distributed widely over the country, to be followed later by oil and the use of electricity, until today wood is used for fuel to a vastly smaller extent than it was, and mostly in detached communities. In course of time the country's railroad system was completed, new construction stopped, and the quantity of wood required for replacement purposes largely reduced by use of steel and creosote. Some fifteen years after, use of lumber in this country began to fall off for similar reasons, a process that has been continuous since then. So much in the general, national fields. As for Maine, these things in addition: about 1900 her export lumber business largely fell off, due to southern and western competition, and twenty years later shrunk further as an effect of the Panama Canal. Paper manufacture did, however, grow up and replace it; in four decades it removed from Maine forests a greater volume of softwood than ever was cut in the same length of time before. Those forests are fairly well stocked and productive today; the worst trouble we have is to find profitable markets for the wood we have to dispose of. If Maine

had followed the leadings of the thinkers and planners of the time, she would long ago have been bankrupt. The common sense of his report the Forest Commissioner himself, an old timberland surveyor, saved by a few pages calling attention to some plain facts showing the value of our woods, and asking the people to exercise more care about fire in them. As for the people at large, there never was a sign of their being stampeded.

The sense of common men is illustrated here; I personally have reposed much confidence in it. But common sense in men of conspicuous position is a factor in affairs as well, and may be given moment's consideration. I presume we would all agree Henry Ford illustrated that in high degree, and it so happens that I have seen statements emanating from him that treat of this matter of conservation. One sort of waste he deplores but not that which can only be avoided by a disproportionate application of labor, for human labor, he remarks, once lost is gone for good, while nature replaces materials. In the resourcefulness of men to supply and invent he has great faith, illustrating that abundantly. Finally he says: "There is a kind of economy that represents only fear. It is the rule of half-alive minds"; and that he deplores as needless and costly. I feel myself that he is right, fairly interpreted. Somewhat the same feeling has come to me before now, at meetings of professional conservationists.

What, however, is the inference from all this that we ought to draw? None certainly, that planning on the statistical and other such bases is needless or misleading necessarily, but that all men's minds are fallible, that large affairs involve so many uncertainties that no one can possibly plan with reliability for long ahead, that before inferences derived in this manner are given full confidence they ought, as a matter of prudence, to be

checked by men of general experience and cool temper. On that head my own thought is reinforced by what a business man of whom I had reason to think highly once stated to me. He had long been guiding head of a big manufacturing enterprise, and had occasion once or twice to change its line of production over in order to escape competition that had become severe. "To a problem of this kind I believe in the application of brains," he said, "all kinds of brains; but when the specialists in the different fields have completed their work and formulated their findings, somebody of plain common sense must take those in hand, pick out the really workable and promising things, study combinations and adjustments between them. Otherwise, look out for calamity."

Timber is not the only thing in conservation, or even in forestry, today; those matters, however, I have neither equipment nor inclination to deal with extensively. Raised up in close contact with the woods of Maine, access to the forests free and natural—fishing, hunting, camping, and canoeing indulged in as a matter of course—I have difficulty in realizing why such elaborate national provision as is demanded today is necessary; while a country whose soil is so largely made up of rocks ill prepares a man to visualize the pictured evils of erosion. Nor has my experience in the South afforded much insight into the last mentioned phenomenon. In fact, the strongest impressions I retain from occasional visits paid to the Piedmont Plateau are of great areas of mixed pine and poor hardwoods changed over, for one generation at least, into pure pine growth by temporary cultivation and its abandonment, and of soil gullyng being stayed by the natural reproduction of forest. I incline, in fact, to the feeling that there may be something substantial in a recent address by Professor Spring on the topic "Fashions in Forestry."

Perhaps in the foregoing I have repelled you. Anyhow, I feel sure I have said enough in the lines thus far followed, and think I will tell you next of my own experience in this southern country, for which no previous opportunity has been presented. You visited it, I think, three years ago, but I was not among you.

To Mr. E. E. Carter I was indebted, as far as Forest Service organization goes, for opportunity to work in this field; and J. E. Rhodes, former secretary of various lumber associations, including that of Southern Pine, in the early years furnished valuable counsel. I first came down in the fall of the year 1917, and took quite a swing around. What I saw in the way of timber and timber growth interested me tremendously. The first cruise ended, I came again at first opportunity. In the course of two or three years I had things somewhat settled in mind, had come to the conclusion, for one thing, that the South was *the* timber growing region of the United States, and realized that I was face to face with the opportunity to convey knowledge of that fact to the southern people.

So I went to it, with all the physical and mental energy I had, contacting timber owners, speaking at meetings, studying on the most vital and practical natural factors, writing as I had material. Here is a point in that connection that may interest you. After three years of that, Rhodes and I got together again and agreed that we hadn't started a thing that seemed worth while. Henry Hardtner, of course, antedated our efforts, and this to be sure is also true—that here and there through the South, as elsewhere, were individual timber owners and operating concerns that were doing the conservative and sensible thing by their land and timber. But the old adage that it is darkest just before dawn was illustrated here. In the autumn of the year 1920 the great concern at Bogalusa, La., started on the reforestation

project that they had been debating for some years. At almost the same time Professor Chapman got the Crossett project in Arkansas under way, and another timber growing enterprise on a considerable scale started up in south Georgia. That, let me say, was the sort of thing I had been aiming at. Actual business success I look on as the best sort of stimulation of enterprise of this sort, and next to that, business confidence manifested by substantial people.

A forester in those days could be lonesome if so inclined. Between North Carolina and Louisiana there was no state forest office, and no forest school except Athens, Ga. At Pensacola was a National Forest office; no sign of any experiment station. You all know how things stand today. Sometimes of late I have felt as old pioneer settlers are said to have felt, that people are getting too thick for me, that I'd better pick up and get into some newer country.

But things once started, it kept me on the stretch to keep up. First choice among the districts I got acquainted with was that occupied by the great body of the naval stores industry, centered around the southeastern angle of Georgia. By 1920 I had that settled in mind, and spent a considerable portion of each season there for a dozen years, studying and writing on the economics of the business and gradually opening men's eyes to the timber growing possibilities of the territory they occupied. In the concern I mentioned as making the first start I early took a financial interest. Hundreds and hundreds of men visited it to see things developed there, as they came along; and the territory from Panama City to Savannah and north as far as the slash pine goes is now full of timber growing enterprises. In its operating standards and its general outlook on the future the naval stores industry may fairly be said to have undergone revolution.

And what is the significance of that as it concerns us here? The effectiveness of suitable, sympathetic guidance, on the level of the men concerned, for one thing, but I wouldn't lay stress on that. The more important thing is the capacity of plain men to respond to a sound and progressive idea. At that point, it is clear to my own mind, the profession in the past has erred, in not having faith in the openmindedness and the competence of their countrymen. For my part, I have often been surprised in the tenacity with which men held onto this timber growing idea when once grasped; occasionally have felt under obligation to check it. I would like to tell you of an appealing instance.

Down on the Gulf Coast south of Tallahassee, Fla., is a man who came over from Louisiana several years ago, bought a tract of land, and settled down to operating it for turpentine. He is an openminded and well disposed man, and when the State Forester proposed that he join his neighbors in cooperative fire protection in which the state would take part, he assented readily. So he bought a tractor, plow, carried out the measures prescribed, and for a couple of years things went along nicely. By the end of that period a generous crop of grass—"rough" we call it down here—had developed, and just at that stage a dry season came along, further than that, he had discovered by this time that he was located in a nest of determined woods burners. In these conditions he lost the results of his efforts, and furthermore, nearly worked himself to death trying to prevent it. When I saw him next after that, he said it was too much for him—he was done with attempts at timber growing and fire protection. I didn't blame him—would have reached the same conclusion earlier.

So the next time I met him, in the office of the State Forester arranging new fire protection plans, it was a matter of

ast surprise to me. What could have happened to change him? The information he volunteered. The autumn before a big mast year had occurred, and a moist winter, not conducive to fire, had followed. All over his territory the crop of little pines had started up, and, as he said himself, "I've got to save it if it breaks me."

Not the best of judgment, perhaps, at that, but think of what that occurrence means, as a manifestation of men's feeling and aspiration, as illustrating a force working for betterment. That isn't an isolated case with me, either. Time and again I've seen the plainest, sometimes the toughest, of men take to this business of producing timber in the heartiest way, the whole plane of their thinking, it would seem, elevated by it. Reflecting on these things, it has seemed to me sometimes that there may be in normal, wholesome men an instinct to produce. If so, what other force can be named that, in the field where it is practicable for it to operate, is so natural and so powerful?

That of one section, not the largest. How of the states further west, Alabama and so on? There is a limit to what one man can do, but others than myself, of course, have of late years been contributing. One or two instances of what has gone forward I would like to mention. Bogalusa again first. I was there before things started, and through the early, critical stages. Most of you, I think, have seen it, and very likely you may have noted some technical mistakes; if so, that wouldn't be surprising, for we were under pressure at the time and had no precedent to guide us. But is that side of the project the main thing? I don't myself feel it so. That to my thinking is final success on the industrial and financial side, which I think, if you will study on it, you will find means this—the provision of forest products abundantly and cheaply for the use of the American peo-

ple. That, I believe myself, is what they really want first in our field, what, to the extent we play a part in these affairs, they will ultimately hold us responsible for. I felt myself that the project at Bogalusa ought finally to pay out, and the hope of seeing that expectation realized is one of the things I have to live for.

But that isn't the only one. Here and there in the region are concerns going ahead, situations different at each place, one line of action and another more prominently developed in response to them. I think it may be a good thing if I tell something of my relations to one other such project.

Down at Century, Fla., just south of the Alabama line, is a big sawmill close to the Louisville and Nashville Railroad. I passed this a number of times, going back and forth, and may have learned the name of the concern; finally I thought I'd stop off and see if there wasn't something there for me. So I did, in the spring of 1921, just previous to closing my southern work for the season.

The general manager proved to be a very pleasant sort of man, and when I told him who I was, and my business, he was strongly interested. "Lots of government men call on me, and usually they make me a lot of trouble," he said. "You're the first one that ever offered to do something for me. You say you're going north right away. When can you come back again?"

I named a time in the fall, with ten days leeway, and when I came around again he noted, the first thing, that I was within it. Then he told me of his situation—the acreage owned and approximate amount of timber on it, the general logging plan and methods, the size of the manufacturing plant, and reasons why that particular plant was economic. Could he, by use of practicable measures, arrange to run that plant continuously? was the first thing he would like to

know; after that, anything that was useful. And this was true further—that he was willing to go into the woods himself. In fact, he occasionally took along the ladies of his family.

We couldn't figure out that it was any way practicable to maintain that plant, but then and afterwards we did hatch up a number of things that seemed advantageous and progressive. Conservative cutting was in force already; from time to time since, the methods have been much improved. The naval stores work of the company was made subject of searching study, and by cooperation of all concerned brought finally to top notch standards. They could see, when it was pointed out, advantage in leaving some thrifty areas uncut as long as might be in order to get the increment on them. Thinning young timber appealed to the manager when he got the idea, and the following winter his men thinned some 600 acres. To start another crop of timber on such land as was not destined to early agricultural use, through control of fire, they agreed might be worth while in a business way, so they went at it, not radically and at heavy cost indeed, but cautiously and cheaply, using their regularly employed men, trying one measure and another.

So things went on. About yearly while I was in the Forest Service I paid the concern a short visit, ascertained what they had done meanwhile, and passed along any ideas I had that I thought might benefit them. And this last fall, open for employment on a commercial basis, the first job I had was with that company. We went over things again, pretty thoroughly this time. In the fourteen years large areas that were vacant at the first visit had stocked up, though very light expense had been involved in it; the young timber already started had developed a lot, particularly under their thinning treatment. Then we studied means

of better fire protection in newly culled woods, on the question if some items of the timber stock couldn't be realized on more profitably in some form other than for lumber, and particularly on the question how to utilize to best advantage the second-cutting timber after the big mill which could hardly work it up to advantage, was closed down. Together we went over these things, inquiring, checking; meanwhile an idea of the general proposition was gained. Finally this idea that certainly will be of interest to foresters, came to the surface—that with the big mill down it ought to be possible to live along comfortably with varied operations of a minor sort till sufficient areas of the new growth came into play so that, as it really looked, as large a business could be maintained on the property as ever was done on it, and all that at cost that hasn't been felt disproportionate or burdensome, so far.

Now it so happened that as these ideas were shaping up in my mind, another set was floating around there, derived from current reading. The author, whose name if mentioned would be recognized by all, had been speaking of what he calls the bureaucratic way of doing things, millennial in the scope of its purposes perhaps, but hasty, little regardful of cost, supported by poorly informed public opinion; then he goes on to describe the methods of wise and capable business leadership. "Men coming together so," he says "are likely to combine a wealth of practical experience and conscientious responsibility. They are compelled to find workable methods. Over every deliberation hangs the sobering thought of personal loss for a wrong decision, for there is no one to whom the cost of error can be passed. Such cooperation appraises its methods and consequences step by step, therefore, and pays its bills as it goes."

It almost seemed to me, as I laid these

two things together in my mind, as if the author of this passage must have been on the ground some time, to derive the basis for it. Once more I want to register my own feeling toward the sort of thing I have been describing, to the effect that it is not only admirable in itself but of tremendous value to the American people.

Probably I have been too long already; anyhow I know it is up to me to close. I chose the title of my talk myself, but when the time came hardly knew how to treat it. I had committed myself to making certain points if I could, and that effectively; on the other hand, I believe in the general policy of being constructive rather than critical. I hope I have maintained a balance between these two things that you will approve of.

In the recent past, I have, as you all must know, made some statements of a highly critical nature. That there is no ease in dodging, but I want to add this—that it was done with great reluctance, and that I hope the whole business may soon be ironed out and healed over.

Tomorrow, as I gather, a committee of the Society will consider the matters with which I dealt. I shall not be here. In connection with that conference I will note that if three sets of official papers that I could name were presented for consideration, the committee would be in position to judge pretty well of issues that may be thought to have been raised with the local forest offices.

A word in closing. A year ago, at the meeting in Washington, the rank and file of the profession were challenged, as they have been before, in respect to fundamental motives. So live, was the burden of the talk, that when one's career nears its close one shall feel content with it. That challenge it seems peculiarly fitting that the oldest among us should answer. In so doing, I shall try to eliminate all idea of challenge in response, also that of boasting. Six short words I think may serve to convey all that might be conveyed at much length. These are: "I have lived in good times." With them, I release you.

DISCUSSION

Mr. A. E. Wackerman: Mr. Heintzleman suggests having forty-eight N.R.A.'s instead of one. That would mean eleven in the southern pine region. I am sure that the industry does not want them, and I suspect that the public would doubt the wisdom of having them. With laws on the cutting of timber in every state, with the machinery that would be necessary to have the rules drawn up, agreed upon, and enforced through court procedure to try all violators, we would have a great deal of confusion. It would be very distressing for any industry.

Perhaps at some future time, if we are ever short of wood and every acre of forest land has to grow the greatest pos-

sible amount of timber, some such measures might be advisable. But with a surplus of timber there is no need or reason for such regulation. It seems that our country is not cursed with scarcity, it is cursed with surpluses, not only of agricultural products and cattle and horses but also of trees. Captain Eldredge's statistics today were very revealing. Incidentally, I am not worried about the scarcity of large trees in the South, as revealed by his chart. I thought that the stand table of present conditions was about the kind of stand table I would like to have in a well-managed forest. We do not need a lot of large trees in managed forests, because they are the

ripe trees, which should be cut as soon as they mature.

Referring again to Mr. Heintzleman's paper: I would like to see the other things he mentioned carried through. We need better fire protection, on the same basis that cities have fire protection. We need more extension forestry, so the people can be informed on how to apply practical forestry measures voluntarily. We also need to promote the wider use of wood, so we can utilize more fully the forests and employ more people.

In the 11 southern states, according to the 1934 forest fire statistics recently released by the Forest Service, incendiarism caused 44 per cent of the fires on the 60 million acres of land protected by the states and private owners. Lumbering caused only 1.7 per cent, lightning 0.8 per cent, and railroads 2.5 per cent. In other words, 5 per cent of the fires were caused by lumbering, railroads, and lightning, and 95 per cent by public carelessness or incendiarism. We have laws about forest fires, yet it is apparent that they are difficult to enforce. If the public is not willing to cooperate to a greater extent than the fire situation indicates, I am sure we would have a hard time putting across any more complicated system of laws, such as for cutting control.

Southern lumbermen are already taking measures necessary to maintain their forests in a growing condition. The South, as a whole, is admitted to be on a sustained yield basis. I believe that when the Forest Survey statistics are released for the entire South, they will show a surprising amount of timber standing and growing. Captain Eldredge showed this morning that for the area covered by the Survey to date, growth was twice the total depletion. Not only is the South, as a whole, on a sustained yield, but many individual operations are already on a sustained yield, and many more are taking the measures necessary to get on a

sustained yield, and after they have operated for a number of years they will find finally that they are on it, and will conduct their businesses in that way. This is not hearsay. I have been traveling for the past year and a half, largely in company with Mr. Moore, who is manager of our department of conservation, and we have seen all this on the ground. We have talked to the lumbermen, and we have been out in their woods with them. We have made such trips in all of the 11 southern states, and what southern pine lumbermen are doing is a revelation that will please you all. I hope you will come down and see for yourselves.

Mr. Edward R. Linn: Mr. Wackerman has left very little for me to say. Hardwood grows along with the pine. During the Code period, I was in a capacity with the hardwood organization like that occupied now by Mr. Wackerman with the pine, and I traveled some 20,000 miles in a year and a half. In those travels I did not meet very many foresters that were doing a similar thing. If you could put ten or fifteen good foresters in the South—we cannot find them as good as Dr. Cary, I know—and let those men get around and see what is happening—frankly, Mr. Wackerman and I did not know when we started out—go into the offices of the mills and into the mills and learn their troubles, and go into and see their forests, I believe very soon we would all be talking the same language, and we should solve the problem of southern forestry without a great deal of difficulty.

The hardwood people have possibly more of a problem than the pine people. Frankly, very few hardwood operators can get on sustained yield without considerable difficulty. However, sustained yield in hardwood can be on a regional or a community basis. A good many of the southern hardwood mills today are really on sustained yield. I know one mill in Natchez that has been running 107 years

There is a mill in Nashville that has been running 67 years. There are records of a number of other firms. In Memphis last week, an official of a large concern laughingly told me they had to re-organize, because their charter was only for fifty years and they found it had run out. They are starting on their second fifty-year period.

So, if we could get some good foresters to come out into the woods and see what is going on, and let the younger men take care of the office work for a while, I believe we could solve our problems much more quickly.

Capt. J. B. Woods: There are a lot of obstacles in the path to this regional sustained yield, or national sustained yield. For example, consider the big concentration of mature timber in the Northwest, which is being forced on the market because the people who own it cannot hang on to it any longer. Also, consider the effect of all this second growth between here and the Atlantic Ocean, and between here and the Mississippi River and the Gulf, if the people who own it, as possibly they will, have to get their money out of it. As for public forest ownership, I am not going to argue how much the public ought to own. I am merely going to say I think the available money, emergency or other, should be used to the greatest degree possible not to buy cut-over lands, which in any case will grow trees that will be available forty years from now, but to stabilize the timber situation of today and the next ten years.

I am not worried about regulation. I am not worried about forty-eight N.R.A.'s. In the first place, I do not believe you can get them. The situation is the same with respect to fire, and regulation, and everything else; until men are convinced of the sense of what you want done, you are not going to get it done; but if we can build up the right conditions and remove obstacles, and show how, men will do

the right thing of their own choice. Selective logging methods will come; they are coming now. Nobody has tried to evaluate the progress made in the South in the last ten years. I know something of the progress on the West Coast in the last two years. Changes are coming fast. It is essentially a matter of education by men who know what they are talking about, who have the confidence of the people they are trying to educate; but in addition, conditions must be created that will encourage continuity of ownership. If you can get people to hang on to the land, and also if you can get markets for subsidiary products which will bring sustained yield forestry in a community, or region, or locality, as well as sustained yield ownership by ownership units, you are going to have something.

A forest credits bill is before Congress. Mr. Silcox will tell you a great number of people in the South are trying to sell timberlands to Uncle Sam. Certainly; there is nobody else with money to buy, and they themselves cannot borrow money to buy or carry timber properties. The Fletcher-Caldwell Credits Bill is a "foot in the door" on that. Governor Myers pointed out to some of us the other day with respect to the Farm Credit set-up, that it not only saved agriculture by the use of federal money, but it revolutionized the terms and methods of making commercial farm loans. That is what we must have. We do not want Uncle Sam to carry the money burden indefinitely, but we want him to show the way to commercial credit institutions to help us carry our forest properties.

Mr. Cowan: The Lumber Code contemplated cooperation of the private owners and the government. Prior to that, the Copeland Report recommended a Clarke-McNary authorization of \$5,000,000. The Committee on Article X recommended \$10,000,000. The private owners were to carry out certain essential requirements.

In the Douglas fir region we spent something in excess of half a million dollars, believing the other side would come through. We have waited three years, and not one thing has yet been done about it. Even if the Lumber Code is illegal, the Clarke-McNary Act is still on the statute books. We recognized certain forest requirements as being good, and maintained them, but the government, whatever its agency, has failed to carry out its promises.

In the Douglas fir region we have kept alive, so far as we can, those requirements which insure better forest practices; all the restrictions which the Code laid upon us. What help are we getting? We are getting a large volume of propaganda that the timberman is denuding and devastating the country. Something like 2 per cent of the National Forest fires during the last 14 years were caused by logging operations, and the rest were caused by lightning and just human cussedness. So far as concerns the territory I am in, the number of our fires in the state of Washington in 1935 showed an increase of 73.6 per cent over a twenty-year average; the merchantable timber burned, a decrease of 93.3 per cent; logs destroyed, 92.7 per cent; and other forms of property lost, 40 per cent. That shows clearly a very marked increase in the ability of the different forest protection organizations to control fire losses, and the sharp decrease in logs lost shows that the timber operators are coming along with their forest protection requirements. But the fires caused by the public increased 70 per cent.

During the last 10 years lumbering fires have come down from 36 per cent to 1.9 per cent of the total, while all other causes have gone up. Incendiary fires increased 240 per cent. Are we to get a Code of Forest Practice thrown at us, and be asked to carry it out, while the government fails completely to carry out its part? Has not the government a

police power over its citizens? The organization I am employed by has increased its expenditures in the last 10 years something like 66 per cent. That is a lot of money. As regards the Clarke-McNary set-up of 25, 25, and 50, we are spending 61 per cent. We need more help, not because the lumbermen start fires, but because the public does.

The Clarke-McNary fund was to be increased when the Code was put through. We kept our side of the bargain. What is the government going to do to help the states?

Dr. Robert Marshall: It seems to me that the talk this afternoon about how safe we are in regard to a perpetual timber supply is just as hopeful and wishful and emotional, and based on exactly as solid facts, as the songs you hear at Salvation Army meetings. In either case we're assured that all will be right after a sufficient length of time. I agree that there is a lot of stumpage on the market today; too much stumpage to maintain prices; but it seems to me that foresters should be most concerned with what stumpage is going to be on the market in the future. So far as I can gather from all the figures which I can find there is not going to be too huge an excess of timber fifty or a hundred years from now.

Furthermore, two of the most significant points concerning the need of forests have been entirely overlooked in the discussion today. One is the fact that as the cheap supplies of such non-reproducible resources as oil, iron, and coal are exhausted, there will be a demand for a greater amount of timber. The second point concerns recreation use of the forest, which to me seems fully as important as raw material supplies. No matter what part of the country you are in, whenever it is proposed to set aside a tract of timber because of its beauty, even if it covers only 1,000 acres, they say: "We cannot

afford to set it aside. We need it for timber." For years the setting aside for recreation of a couple of million acres in the Adirondacks, within ready access of a quarter of the population of the country, to whom this recreational use was more important than anything else in the world, was bitterly fought by the lumber people and many economists because there was need of that timber to keep mills operating. From the same standpoint, saving the forest for recreation is fought constantly.

Mr. Wilbur R. Mattoon: The farmers of the country own nearly one-third of the forest land of the United States, or 150,000,000 acres, and it averages of high quality, because it lies in the regions of the best soil. From the Southern Forest Experiment Station we learned five or six years ago that one-half of the total lumber cut of the South comes from farms. Today the bulk of the huge supply of pulpwood feeding many of the southern papermills is farm grown. The same is largely true elsewhere. In considering this question of sustained yield, the question comes up: "What is the situation on the farms of the country?" The trend toward more intensive cultivation of the better lands means more acreage in farm woods. Conditions are very favorable for convincing the farmer that he should practice timber farming. That word has come into use a good deal lately—"timber farming"; and timber often is a considerable element in the farm income. In 1930 the state of Virginia had three leading farm crops—tobacco, potatoes, and forest products; they stood very close together. In North Carolina timber held the same rank. There were five states in the South on that same basis. In the New England states the timber returns to the farmer were also very substantial. The value of the yearly timber cut on farms runs around one-third of a billion dollars.

What are the agencies that are operat-

ing toward sustained yield on the farm? We have, as you know, extension foresters in about 36 states, affiliated with the state forestry departments, working together in a united program, partially supported by federal Clarke-McNary money for extension forestry; and also the large vocational agricultural program in the states—very strong in the South—in which forestry is supported by the state foresters and the extension foresters and is reaching a great many farm boys and adult farmers as well. Then, those emergency measures, such as the Emergency Conservation Work program of the C.C.C. camps, get back on the farm in a great many ways, especially through the Soil Conservation Service.

I mention that as a last point—the tying together in a unified way of all the resources on the farm, for better lands, better pastures, and better methods of growing and utilizing woodlands. The Soil Conservation Service program is a rounded unit and it always includes the timber. So, I think with these agencies for teaching the farmer, the prospects are good for the farm woodlands to hold up their end in providing for a sustained timber yield.

At this point Mr. Bernard Frank read the following statement, submitted by Mr. Edward C. M. Richards, Chief Forester of the Tennessee Valley Authority:

In reading over what has been written for the last few years on the subject, pro and con, of public acquisition of forest lands for timber production purposes, I would like to call attention to one assumption which is implied, although often not specifically mentioned, and to offer one suggestion.

In much of the discussion here the assumption is made or implied that very considerable progress has been made in the actual practice of forestry by private owners in the United States, especially in

the southern pineries. This, of course, raises the question of a definition of what is meant by the real practice of forestry. From the standard of what constitutes real sustained yield forestry management anywhere in Central Europe or in the Scandinavian countries, where sustained yield management is taken as a matter of course, the extent to which forestry is practiced on private lands—or on public lands either, for that matter, in the United States—is so infinitesimally small as to render absurd to anyone who has studied forest management abroad the inferences, or even outright claims, that have been made that the practice of forestry is well under way on private lands. The claims that a little fire prevention, a little top-logging, or even such efforts at conservative woods practice as partial cuttings, is sustained yield forest management are readily seen to be inadequate when such questions as the following are asked for any given tract of timber:

1. What is the actual total area of the forest *permanently dedicated* to the continuous sustained yield practice of timber growing?
2. What is the present growing stock now on hand?
3. What is the normal growing stock?
4. What is the present rate of growth?
5. What are the technical details worked out and accepted for the regulation of cut?

Unless reasonable answers to the above questions are actually available and in use by the management of a given tract, the claim that the area is being handled on a sustained yield basis is absurd. Unless the land is dedicated to permanent forest use and unless the questions in regard to growing stock, rate of growth, and regulation of cut are actually worked out, accepted, and used, the claim that forestry is being practiced would not pass muster anywhere in Europe where real forestry is going on.

In addition to the above comment, I would like to offer the following suggestions:

Some of the articles or statements issued criticize the public acquisition of forest lands for timber production purposes on the ground that this may enter into competition with private forestry. These criticisms are made especially in the case of the public acquisition of first-class timber-growing land containing good merchantable timber or second growth. The inference here is that neither the state nor the federal government has any business handling the profitable production of timber crops, and that all of the best lands for this purpose should be carefully left to private owners. This point of view is that of a person looking at a single tract of forest and thinking only about the possibilities of a private owner of that particular tract organizing it on a basis which would net him a personal profit. The suggestion I have to offer is that the foresters of the United States are looked to by the public in general to see the forest problems of the country in a big way, and not in a small way. The country at large is primarily not interested in one particular tract of, say, 100,000 acres. America is interested in the whole problem of the proper continuous use of the forests of the whole country. To take the southern pineries as an illustration, the people of the United States are now and will increasingly become interested in the forest management of millions of acres of this great natural resource for the purpose of producing products, furnishing work to people, and increasing the prosperity of the United States. As I see it, the viewpoint is this: How can the southern pineries of some 100 million acres contribute the greatest financial and social benefits to the people of the United States? The question is not how can Bill Jones, the owner of a single tract of say 20,000 acres in southern Georgia, get the

greatest income from his property for 1936. We foresters have got to have a broader vision and a bigger mind than to think in such terms as these.

My suggestion is that the foresters of the United States look at the whole area of the southern pineries as a single natural resource. How can it be handled? Primarily it has potentialities of the highest order. Southern yellow pine for construction timbers, flooring, and other general uses stands in a very high place. Nowhere else in the world is there any similar area capable of producing these valuable products so rapidly and so economically. Add to this the fact that the production of turpentine and paper pulp in this same area offers great possibilities, and from a national point of view the organized management of all the millions of acres of the southern pineries presents an excellent opportunity for forestry in the future. The question of markets immediately comes to mind. My suggestion here is that again the foresters need to broaden their vision and extend their minds. The production of southern yellow pine for lumber, pulpwood, and turpentine offers a supreme opportunity for an export trade of the first order. These materials, in the quality and quantity which we can produce, will find markets all over South America, southern Africa, the Near East, Australia, and the Orient. In none of these countries are there any such potential forests of softwood timber of comparable size or capacity of growth. As in the case of Finland, the Scandinavian countries, and Rumania, a great part of the forester's activities have to deal with the production, harvesting, and shipment for export trade of forest products. The same is potentially possible and probable for such areas as the southern pineries. In the long run, as has been well demonstrated in many places, the organized management of large areas of forests on a sustained yield basis has

the stabilizing influence on work, income, and general economic welfare of the region which is so much now needed in the United States. The handling of the southern pineries for a great export trade reaching over the world is just the kind of enterprise needing consideration at this time.

To us as foresters, the above suggestions automatically are recognizable as practically impossible for private owners to embark upon. Only permanent governmental agencies, both state and federal, and possibly smaller units, can seriously consider such a long-time set-up. And lest it be charged as apparently in the minds of some that public agencies have no business in operating anything as a profitable enterprise, let me refute this charge by pointing to the successful operation of the Holland tunnel and the great bridges over the rivers in New York, operated by the Port of New York Authority at a handsome profit. Foresters have a constructive job ahead of them. It should not be lost sight of in the desperate efforts put forth by certain people to drag their feet, in the hope of extracting a few more dollars for their employers and friends among the timberland owners before the latter throw over their claims of ownership to their depleted and devastated properties, and allow their lands to go back to public ownership in default of taxes.

Mr. W. L. Hall: Twenty-five years ago the Weeks law introduced, and made applicable to our forest problem, a new principle; the principle of federal-state-private cooperation. Hardly any forester in the country doubts the wisdom of that principle. As Mr. Cowan has pointed out this afternoon, there has been a lot of discussion on its application—on how far the federal government and how far the states and the owners should go; but I do not think we doubt that if we make

sufficient provision for carrying it on further, we can solve our forest protection problem under this plan.

Mr. Mattoon has just brought out the fact that we follow the same principle in the extension work and in agriculture. The Triple A plan has gone down. Personally, I am not sorry, because I felt that it was full of inequality and injustices. Now the problem is to shape up a better plan for controlling agricultural production. I doubt whether any better principle will be found upon which to rest it than this principle upon which we have been protecting the forests during the past twenty-five years, namely, an equitable plan of cooperation between the states, the federal government, and the private land owners. I feel sure that a plan based on this principle is going to commend itself to the leaders of the country for meeting the tremendous problem

of preserving the productivity of the soil and with it the more incidental matter of controlling crop production through rotation in farming and the withdrawal of certain areas from cultivation. I congratulate the foresters of this country upon the development and the application of a great principle. I am glad to see this afternoon the diversity of opinion upon what the possibilities in forestry are. It is only by the expression of such diverse points of view that we can hope to make progress. Very solid progress has been made. We should go on doing our part, as foresters, in working out this principle, applicable not only to the forestry problem but also to the agricultural problem of the country, for a form of control which will permanently and greatly benefit the whole Nation.

The session then adjourned.

TUESDAY MORNING SESSION, JANUARY 28, 1936

SUBJECT: SOCIETY AFFAIRS

Chairman: President H. H. Chapman

THE reports of the Executive Secretary and the Editor-in-Chief were presented. They will be published in March S. A. F. AFFAIRS. President Chapman then called Vice-President Dana to the chair, and presented the Report of the President, which likewise will be found in March S. A. F. AFFAIRS.

Chairman Dana: I know that I express the sentiment of the entire Society membership in saying how greatly we appreciate the leadership of the President during the last two years, in strengthening the internal organization of the Society and making it a more effective force externally, and promoting desirable forest practice. There has been more activity in Society affairs than during any similar period since the Society was organized in 1900. I doubt if most of you realize how much time and energy our President has devoted to his task. Your endorsement has been well expressed in the balloting. I know you are delighted that he is willing to serve for another term.

The President's report for the last two years is now open for discussion.

Mr. H. L. Baker: I would like to add a few words to what you have said. Regardless of how we all may feel about various issues that have been raised during the past two years, I am sure that in the minds of every one there is a great admiration for our President, who has established and fought for the existence of the Forest Service, and the state organizations, and private forestry, and all that the Society stands for. Such a tremendous outlay of effort merits an expression from this group to show its true appreciation of what he has done. I move a rising vote of thanks.

Chairman Dana: You have the Society

back of you. I now return the Chair to the President.

Chairman Chapman: I did not turn the Chair over to Sam Dana to "pull" anything like this, but I forgive him, and I appreciate it.

The report by Dr. Joseph S. Illick on "Organization of State Forestry Departments" will be presented. (This report appears in the portion of the Proceedings devoted to Committee Reports.)

Chairman Chapman: I am sure you share with me appreciation for this admirable piece of work. The development of the federal Forest Service should be balanced by an equally strong—and an equally important—development of state forestry. I think the Society will lend all its energies to furthering that.

Let me explain the procedure with regard to reports and resolutions. There has been great confusion regarding the authority of the meeting in adopting resolutions, and also regarding the method of passing on reports. The procedure is clearly outlined by the Constitution and By-Laws. A special provision of the Constitution is aimed at preventing a meeting, composed of one-fifth or one-fourth of the Society, binding the Society. Therefore, any action taken by a meeting of this kind is not so binding and does not represent the Society, nor shall it be quoted as being the stand of the Society.

Any policy which requires Society approval, and is of sufficient importance,

must be balloted upon and decided in that way. Otherwise, the Council functions to represent the Society as a policy-making body if the action proposed is not inconsistent with the Constitution or previously adopted ballots. Appeal can be taken from any act of the Council by a petition of fifty members, whereupon it becomes mandatory for the Council to adopt the request or submit the question to ballot. So we have a democratic organization, that cannot be run by the President or the Council in matters of policy.

Now, in regard to reports; they are submitted and accepted and will appear, printed, in the JOURNAL. If the reports suggest or recommend policies, the reports must be acted upon by the Council. If it approves a recommended policy, that becomes the policy of the Society unless the Council voluntarily or by request puts the question to ballot. Therefore we have not appointed a Resolutions Committee. Resolutions are usually passed. However, there is no objection to offering resolutions. The meeting is open. Any resolutions which may be passed will go to the Council, and if approved by the Council will be announced as Society policy.

Mr. W. L. Hall: I wish to present a resolution to be considered by the Council. Yesterday, near the close of the afternoon session, I referred to the principle of state, federal, and private cooperation in the protection of privately owned lands. I think that we may justly claim success in applying that principle. Furthermore, I think it would be entirely appropriate for this organization, in this time of confusion, to say we believe that principle might well be considered in connection with the great problem of soil conservation. I will read my resolution, stating, however, that it has been hastily drawn up, has not been considered with more than one or two other

members of the Society, and probably needs change of form and various points of view brought to bear upon it:

"The Society of American Foresters through a period of twenty-five years having observed the results of the application of principles of state, federal, and private cooperation in the protection of private forest lands, and having found the principle sound and adequate, and plans based thereon satisfactory when sufficiently financed and well directed; furthermore, having proved that the protection of forest land is a safe and wise policy, preventing soil erosion and waste of land under even most extreme conditions, thus being a powerful measure in dealing with soil conservation: the Society of American Foresters therefore commends to the Congress of the United States the principle of state, federal, and private cooperation as exemplified in the Weeks Act of 1911 and the Clarke-McNary Act of 1924, as a basis for solution of the entire problem of soil conservation and maintenance and properly balanced agriculture to rule production."

Mr. F. G. Wilson: Does that include the work on the shelterbelt in the Great Plains? Would that be included in soil conservation?

Mr. Hall: I would not claim the ability to answer all questions as to how far this principle could well extend. Frankly, in answering your question, I would not wish to express an opinion. I would rather present the matter to the Council for such consideration as it should have.

Mr. C. S. Cowan: The Clarke-McNary Act had as its primary purpose fire prevention, and it would appear to me that we are somewhat confusing the issue by bringing in extraneous matters.

In the late Omnibus Bill—I think I am well advised in using the word "late"—two other new bureaus were added under the Clarke-McNary Act, and I think the Clarke-McNary Act will wind up by being

means of furthering new governmental functions rather than carrying out the purpose for which it was originally intended. In my opinion the Society could well commend to Congress that we receive the money which was authorized in 1924, and which is still being promised. Because of the Clarke-McNary Act, we have progressed a long way with regard to forest protection. We have developed a spirit, particularly in the West—and in what I include California—that has gone far toward wiping out private owners' ties. We have come well below the minimum set up by the Forest Service requirements as the allowable acreage to be burned over each year. In the past two years, instead of having one per cent of the forest area burned over, we have kept within one-fortieth of it. It takes a long time to build up a spirit of cooperation. We have built up a record, and I think the Clarke-McNary fund should be set aside for the assistance for which it was primarily designed.

Mr. A. E. Wackerman: I do not understand exactly the purpose of the resolution. I think Mr. Hall should explain it a little more fully. If the resolution is merely in favor of cooperation, I am sure we are all in agreement about the desirability of cooperation. However, to pass a resolution about it seems unnecessary. It would be like resolving about a platitude. What is the specific need for the resolution, and what good will it do?

Mr. Hall: This Nation at the present time is floundering about with the problem of agricultural products and surpluses. You know the plans that have been tried; you know the confusion that exists. It is my feeling that the best fundamental approach to that problem is on the basis of soil conservation.

Mr. E. V. Jotter: Just at this time, as most of you know from reading our newspapers, this matter of soil conservation is

being considered. I am not sure as to what the Society ought to do with reference to soil conservation. The Soil Conservation Service is the agency at present charged with soil conservation by Congress. When this resolution is considered by the Council, I think the matter should be referred to the Soil Conservation Service to see whether it would be a help at this time.

Mr. L. H. Douglas: I agree with the gentleman here that the immediate purpose of this proposal is obscure. Perhaps I do not have as keen an understanding as the rest, but I still do not understand it. I would like to repeat the gentleman's question and ask what is the immediate purpose of this resolution, and that it be made more specific. Is its purpose removal of the federal government from soil conservation work in the states, as at present conducted?

Mr. Baker: I am in favor of the resolution. I do not know so much about the soil conservation phase of it, but to advance for forestry the principle of federal, state, and private cooperation is vital. Following the passage of the Clarke-McNary law, several states created Boards of Forestry and Forestry Commissions, and a vast expansion in fire protection work ensued. When a Farm Forestry Extension Service was set up, though we were in doubt as to whether the county agents would be interested, we said it was a good bet; that we needed federal leadership in this field.

The forest nurseries set up under the Clarke-McNary law have resulted in an activity on private lands that has grown by leaps and bounds. Here is a fundamental principle of government. The federal government finds as its function in many fields the building up of state activities. The principle of federal aid is the underlying thing that has built up our highways standards. In vocational education in schools, and in agricultural

extension, the whole thought is to build the state's service.

I hold that if the federal government finds that a state is not sufficiently interested in forestry to create a Board of Forestry, the same attitude should be taken that the Agricultural Extension Service takes with regard to a farm forestry extension agent in a county. They try to interest a county in setting up such a position, and when it is set up, they build that man for service. So let us not be too concerned because faster progress hasn't been made, but let us be concerned about building the state forest services. Sooner or later other states, if they are interested in a solution of their problems, will follow along. The principle of federal, state, and private cooperation is the foundation of successful forestry in the United States on two-thirds of the land.

Chairman Chapman: Mr. Hall, do you design this suggestion to be a recommendation that the cooperative principle be given its due place without attempting to exclude the principle of regulation?

Mr. Hall: Yes, sir, I do; that is expressly what I have in mind.

Chairman Chapman: You did not expect it to be substituted for that; it is an emphasis on the cooperative principle, as I understand it?

Mr. Hall: It is.

Dr. Robert Marshall: If Mr. Hall's resolution is merely an emphasis on the cooperative principle, that is fine; but I want to suggest that he make that briefer, and simply give three cheers for cooperation and let it go at that. But unfortunately Mr. Hall put in some more words, and said that cooperation was the basis of successful forest management and should be the basis of the soil erosion campaign. I don't believe for a minute that cooperation is going to

solve either the forestry problem or the soil erosion problem; there has to be something a good deal stronger behind both. I can't see that cooperation has brought much forestry to brag about. The Copeland Report found cooperation inadequate. I don't think the Society should put itself on record as feeling that cooperation is the major basis for the future soil erosion program, or state it has been the major basis of successful forest practice in the past.

Mr. Baker: The public has not recognized its responsibility. One section of the so-called Omnibus Bill recognizes the cooperative principle in the form of provision for extension agents in the state to cooperate with the land owners. I want to make this point clear: there is just as much interest in a state before we set up a nursery as afterwards, but before nothing is doing, because we offer nothing. In Florida we have land owner after land owner repeating orders every year for planting stock. Would he have bought it if we had not offered it to him? In Florida we have land owner after land owner cooperating in fire protection. Would he have taken on that activity if we had not offered it to him?

But in a number of things we have not offered aid and assistance. We have not been thinking constructively as to how we can remove the handicap of forest taxation. We have not been thinking constructively as to how forest management can be gotten over to forest owners. We have not had leadership along that line. There are only two men in the United States who have as their objective to build that service through the states—Dr. Carr and W. R. Mattoon. W. R. Mattoon has worked wonders through the Agricultural Extension Service in aiding farmers.

If we had one-half the constructive effort and thinking and working between the federal, state, and private owners in the solution of these problems that has

one into efforts to get State Forests and National Forests,—one-half of that effort put into a constructive cooperative program—we would have private forestry where it could do something. Only when the public has redeemed its responsibility under such a program is it in position to say that all the problems of timber depletion are the outgrowth of private neglect. The public has neglected its part, and that is a very vital thing. The first essential is to recognize it, and the second essential is to put men to work on solving the problem cooperatively, through the states and with the private owners.

Dean Hugo Winkenwerder: Does your resolution, Mr. Hall, pertain particularly to the Clarke-McNary protection fund? The amount of money to go to the various states for cooperation in protection against fire?

Mr. Hall: I have not gone into that; my concern is merely with the cooperative principle, which, in so far as the protection of forests on private lands is concerned, has had successful application wherever it has been financed and well directed.

Dean Winkenwerder: Would not extending the undertaking to the soil conservation problem spread the funds over a large territory, and thus sacrifice the benefit originally intended?

Mr. Hall: In my way of thinking, it would not reduce the funds, rather it would bring the principle before the whole country. Probably it would very greatly strengthen the application of forest protection, while extending far beyond it a meeting the problem of soil conservation.

Mr. Wackerman: I am thoroughly in accord with what Mr. Baker has to say about private, federal, and state cooperation in fire protection and other forestry activities. But that resolution, as I inter-

pret it, does not mean an indorsement of cooperative forestry as such. I interpret the resolution to mean that we would recommend a method of controlling agricultural production and a good many other things, and personally, I don't know enough about that to vote in favor of it. I would like to support a resolution endorsing the principles of the Clarke-McNary Law and recommending that the full authorized appropriation be appropriated.

Mr. Hall: I recognize that this is a body of foresters, and not a body of agriculturists or farmers. Still, some of us have had contact with the agricultural problem, and have given thought to it. In my judgment, the principle that worked out in fire protection might carefully be considered with a view of applying it to the larger problem of soil conservation.

Mr. Jotter: I move that the resolution be referred to the Council. I think it should be given consideration by the Council before any action or vote is taken on it.

The motion was put to vote and carried.

Mr. R. B. Goodman: I listened with a great deal of interest to the report of Mr. Illick on state forest administration. The thought has been occurring to me that the work of that committee might well be extended to include not only state forest administration, but also the subject of state forestry jurisdiction. We are all a little bit at sea in every state as to just what are the boundaries of our state jurisdiction in forestry. In several states certain functions have been ceded by the legislature to the federal Forest Service. Several new federal services are now working in the states, with or without concurrent jurisdiction. I would like to suggest to the Council, if the Committee will agree, to have its functions extended to a study not only of state forestry administration but also of the state forestry func-

tions, powers, and responsibilities in each state.

Chairman Chapman: The Chair will be glad to take this up with the Committee and Council.

Mr. L. W. Rathbun: I should like to read a resolution that you might commend to the Council for action. This resolution was passed by the Botanical Society of America, and a similar resolution was passed by the Ecological Society.

Whereas the federal government, states, and other agencies have embarked on a large scale program of forest planting for timber production, soil conservation, wildlife management, and local shelter from wind, which involves the use of hundreds of species of trees and shrubs never before artificially propagated on a large scale, and about most of which information is fragmentary or entirely lacking, and inasmuch as forest seed require methods and technique differing widely from that commonly used for agricultural seed, there is urgent need for a central laboratory for testing of and research on forest seed. Therefore the Society of American Foresters recommends the establishment within the U. S. Department of Agriculture of a central forest seed laboratory.

Chairman Chapman: The resolution deals with a subject which is being increasingly recognized, abroad and in this country, as having a vital significance for future forestry. We are too apt to postpone elementary basic considerations of silviculture, such as this is, and things go by chance, to suffer fifty years from now. What will you do with this resolution?

Mr. C. L. Stevens: Up to a few months ago I was chairman of the Seed Certification Committee of the New England Section, and I would like to see the resolution adopted.

Mr. Perkins Coville: There is already in the Department of Agriculture a seed-testing laboratory. I think there might be some confusion unless it is specified that a forest seed laboratory is intended under the Forest Service.

Chairman Chapman: Council can correct that.

Mr. Nelson: There is one thing about that; it seems that you are emphasizing if we adopt this resolution, only one section of the Omnibus Bill, which, I understand, includes provisions for a forest seed tree testing laboratory.

Chairman Chapman: Yes, this one point is singled out by the resolution. There is no objection to emphasizing a point, if the meeting so wishes.

The resolution was put to vote, and adopted.

Mr. Hall: Does the Council, in acting upon such matters as have just been referred to it, itself decide whether a membership ballot shall be taken, or does the Constitution prescribe?

Chairman Chapman: If a new policy is involved, on which no precedent has been established, the Council will probably decide that the question must be referred to the Society.

The session then adjourned.

TUESDAY AFTERNOON SESSION, JANUARY 28, 1936

SUBJECT: LAND UTILIZATION AND PLANNING

Chairman: Verne Rhoades

THE meeting was called to order by President Chapman and immediately turned over to Mr. Verne Rhoades, of Asheville, N. C., as session Chairman. Thereupon the Chairman called for the presentation of the following papers:

LAND UTILIZATION AND PLANNING

By L. F. KNEIPP

U. S. Forest Service

DURING the past five years particularly, the concept of planned use of land has commanded increasing attention and a rapidly mounting proportion of the volume of news releases of various public agencies. The future will determine whether it is to be a permanent and logical step in a national reorientation of social and economic forces, or merely a sky-rocket movement arising in a flare of stimulated interest culminating in a burst of burning but short-lived principles and projects, and descending to earth as a dead and useless relic to excite only the momentary curiosity of youthful minds. But every circumstance indicates that it will have permanent results. Any movement that causes the people of the United States realistically to view and analyze the bases of their national economy will be of enduring value. In any event, the fact that almost one-third of the land area of the United States apparently will serve its highest purpose only through the agency of forests suggests that every forester has a direct personal and professional interest in all proposals to systematically plan the use of non-urban lands.

In essence, land planning is nothing

more than the analysis and measurement of national needs, both present and prospective, quantitatively and geographically, for every type of service and commodity derived from lands; followed by systematic survey, classification, and dedication of the land resources of the Nation to the types of service or commodity production thus determined, in the proper proportions and geographic relationships. Phrased in another way, the job is to determine in relation to lands and natural resources: What to do, the best way to do it, and the agencies best qualified to do it. Nothing would seem to be more logical. The chief characteristic of civilized man is his ability to anticipate and plan for the future, and no element of his cosmos more vitally affects his future than the soil resources of his Nation.

But the translation of the concept into an accepted and applied principle of social action is infinitely more than a matter of administrative mechanics and procedure. In an absolute autocracy an edict backed by force and fear might turn the trick. But in a Nation governed by democratic principles which emphasize rights of individual liberty and of private property, slow intellectual acceptance inspired

by logical and convincing appeals to the personal and patriotic interests of the agencies and individuals who have the power of final decision must be the major influence. The field to be covered staggers the imagination. Of the agencies of government alone there are 48 states, 3,062 counties, and 19,769 townships; to say nothing of 16,659 cities, towns, villages, and boroughs, 128,548 school districts, and 14,572 other civil divisions. Of landowners vested with power to decide forms of land use there may be as many as 5,000,000. The equation necessarily includes the limitations of state constitutions, the established structures of state law and county ordinance in relation to rights of property and to taxation, the legal limitations and administrative objectives of agencies charged with administration of public properties, the economic relationships of industry and commerce, the economic security of dependent populations, and the diverse rights, interests, and objectives of the private owners of lands. Reorientation of the numerous and often conflicting factors into a single harmonious pattern and plan of land use is a task that challenges the Nation's abilities and brains.

Yet the situation cannot indefinitely be ignored or evaded. The wholly destructive effect of long continued disregard of natural and economic laws upon the permanency and progress of a Nation is too well established by human history to be debatable. Within our own land and time, the tremendous economic lessons, the staggering sacrifices of human hopes and values attendant upon unsound types of land and resource utilization, have been too numerous and too tragically evident to leave any room for doubt. As the professional group claiming leadership in a field that comprehends almost one-third of the Nation's land area, foresters are faced with an inescapable obligation to explore and give the fullest practicable application to the principle that human

uses of lands must be correlated with human needs and with the limitations of natural action.

The merits of a balance between uses of lands and human dependence on services and products of lands are not wholly theoretical or hypothetical, for they are clearly demonstrated in certain of the older countries. One good example is afforded by the German Reich. To support a population of 68 million people, or 53 per cent as much as that of the United States, Germany has a total land area slightly less than that of Michigan, Wisconsin, and Minnesota combined, and none greatly different in soil quality and climatic influences. If the three states named could be imagined as containing along their southern border a section of the Rocky Mountains, and at varying intervals several segments of the Appalachians Range, they would represent a fair equivalent of the physiography of Germany. In Germany the ratio of acres per person is 1.7; in the United States it is 14.6, or more than eight times as great. Yet, through wise use of its soils, Germany locally supplies four-fifths of its wood requirements, and perhaps an equal or greater proportion of its food and clothing requirements.

But that is not the entire benefit. There exists coincidentally a mentally restful and stimulating repose and beauty of the landscape; and more important still, the permanency of institutions which justify farm buildings of masonry and artistic design, instead of wooden shacks; saw mill smokestacks of brick or concrete rather than sheet iron; urban structures that are permanent contributions to community wealth, instead of structures designed for wreckage within the quarter or half century in which obsolescence will overtake them.

It must be conceded that this condition is the result of centuries of evolution rather than programmed planning; that in part it represents adjustments of hu-

an needs to forms of land use dictated by whims or personal interests of powerful landowners. Some of Germany's best forests exist today because three centuries ago some Archbishop or Prince had greater love for the hunt than for farming, and forbade the clearing of lands suited to crop production. Some of its farms would be more useful if converted to forests. Nevertheless, the country, in the main, represents a well considered adaptation of land uses to the balanced needs of the dependent population; so much so, that the forces of both law and popular opinion impose definite restraints upon any landowner who for motives of personal interest contemplates uses of his own lands which would disrupt the pattern to which the Nation has adapted its entire economy.

In the United States the land-use planning movement already has passed from the stage of discussion into that of definite action. The major agency in the field is the National Resources Committee, which has divided the United States into eleven districts, each in charge of a district chairman and employing a district consultant, aided in each state by a state consultant working in cooperation with the state planning board. Cooperating with the National Resources Committee are two regional planning commissions (the New England Regional Planning Commission and the Pacific Northwest Regional Planning Commission), 43 state planning boards (of which 30 are established by legislative act), 250 county planning boards, and an indeterminate number of municipal planning boards. Thus a wide but closely integrated organization has been spread over almost the entire Nation.

Coincidentally, a national program of planned land use, relating primarily but not exclusively to agricultural use, has been initiated by the Department of Agriculture under the guidance of the Agricultural Extension Service. The stud-

ies will be conducted through a structure of county agricultural program planning committees in all counties where the establishment of such committees is practicable. Each committee will consist of from ten to twenty representatives of business, farmers, county governing agencies, etc. To head up the program there will be in each state (1) a state directing committee, consisting of the Director of Extension, the Director of Experiment Stations, a leader of the research project on adjustments, and a leader of projects, and (2) a state working committee, consisting of a leader of this project, extension specialists, county agent leaders, etc. While this movement deals primarily with farm lands and the adjustments dictated by considerations of agricultural economy, it will bear significantly on the question of forest land uses.

A third program is that of the Resettlement Administration, designed primarily to establish sound bases for the future plans of that organization. It is conducted through the eleven regional directors of the Resettlement Administration, each of which has a regional chief of land use planning section. In each of 40 states there is also a land planning specialist, who reports to the regional chief.

Aside from these three groups specifically organized to systematically study and plan the use of lands of the United States, there are a number of administrative agencies whose functions necessarily include planned uses of lands. Conspicuous among these are the National Park Service, the Bureau of Indian Affairs and the Division of Grazing of the Department of the Interior, the Soil Conservation Service, the Biological Survey, and the Forest Service of the Department of Agriculture, and the Tennessee Valley Authority. While these seven organizations are not diagrammed parts of any of the three land planning bodies, they presumably are cooperating with those bodies to the fullest practicable degree,

and constructively contribute to the general progress of all three movements.

All of the agencies referred to are official in character, but include a large proportion of non-official cooperators, many of them persons of the highest standing in social and economic fields, who, without any incentive other than a desire to promote public welfare, are giving generously of their time and talents. In that classification there no doubt may be included many of the professional foresters of the country. Foresters obviously have a wide range of agencies with which to affiliate in land planning fields. For the average forester the obvious course will be to cooperate with all of them. Even though their organizational identities may be separate, they are, after all, parts of a common movement, and the products of their several programs will contribute to a common objective of public progress. This is the principle by which the Forest Service has been and will be guided, and the one which no doubt has been followed by the state forest organizations and foresters in other than public employment.

So much for the mechanics of the situation. The diagrams of organization have been drawn, the objectives have been defined, and the stations have all been manned by qualified personnel. The cooperation of all potential collaborators and contributors has been solicited and, where extended, accepted. One may now appropriately speculate as to how effectively the movement will function, how far it will go, how much it really will correct the misuse and abuse of soil resources that has characterized our history to date. In search for the most acceptable answer, it is logical to consider some of the conditions which must be met.

Our wastage of soils and natural resources is due primarily to the fact that we seem to have more of them than we actually need. Thus there is lacking much of the incentive to constructive action that

would exist if our natural resources fell below or only slightly exceeded our national needs. Constructive action inevitably will entail sacrifices and painful economic and social readjustments, which will be made slowly and unwillingly unless motivated by compensations not only adequate but immediate. And the real compensations of a sound program of land use are in the future rather than the present. Ultimate social security and economic independence will be the end results rather than immediate cash returns. Thus the first obstacle to be overcome will be the widespread apathy or inertia, which will encourage and support such active opposition as inevitably will take form.

An assumed or attainable excess of natural resources suggests a conflict with the economy of scarcity which hitherto has dominated this country's economic thought. An excess of any commodity, no matter how serviceable it may be, under present economic concepts disproportionately diminishes the price that commodity will bring in the open market. That circumstance raises an interesting question as to what the consequences would be if the annual production of timber per acre in the United States equalled that of Germany, since in such event we would be growing about 136 billion board feet of timber, or its equivalent, per year; and at present our saw timber consumption amounts to less than 18 billion board feet per year. The old economic order unquestionably would construe that possibility as dictating a reduction rather than an increase of the area dedicated to forest use, or at least a cessation of intensive silvicultural management. Disciples of the new economic order, however, would hold that our future use of forest products may be immeasurably greater than our past use, and that provision for the ultimate need must be made far prior to the time the need materializes; that the social values of forests are not measured by the cash

receipts for timber products; that rather the forests must be developed as means of life for a considerable proportion of the population; that if it costs more to maintain forests than their timber products will bring in an oversupplied market, the general public benefits justify a public assumption of the cost. In this situation lies one of the major conflicts of thought among professional foresters, and no forester can escape the consequences of the decision, as it will have a vital bearing on the future of the profession. And if foresters cannot agree on so fundamental and vital a question, what is the probability that other groups less conversant with the situation and less personally interested in it will reach any unanimity of opinion as to the proper course?

The question cannot be decided wholly on the basis of industrial and financial economy. If that were the sole consideration, one readily might reason that since the best 200 million acres of forest soils in the United States under maximum intensity of silvicultural management would produce all the wood products that would be needed, the proper principle would be to concentrate all forestry effort on that 200 million acres and virtually forget the other 400 million acres. But such reasoning would entail complete disregard of the social and humanitarian factors, for upon the other 400 million acres classed as actual or potential forest soils there depend for economic existence hundreds of thousands of citizens of the country and all of the property and social and political and cultural institutions that represent the fruits of their effort. One answer might be to let those people adapt themselves to uses of their lands other than forestry, in which event the natural query would be: "What other uses?" If no logical answer to that query suggested itself, there might then follow the suggestion that the people dependent upon the unneeded 400 million acres of forest

land remove to some other part of the country, which would inspire the further query: "What other part, and how would they support themselves there?"

Each region is going to claim and be conceded its inherent right to employ its own potentialities of timber production to the limits established by its own needs and trade relationships. In calculating its needs it is going to consider not alone the requirements of industry and commerce for products of the forest, but also the requirements of its population for economic opportunity. It may be the soundest social planning to intensively manage lands of the third site quality in one region, rather than additional acreages of land of the second site quality in another region. Selection of the forest areas to be intensively managed must be governed by regional as well as national circumstances.

Solutions for these difficult questions would seem to lie, if anywhere, in systematically studied and planned land use. The need for the forester to take an active part in such land use planning therefore seems inescapable. By giving generously of his time and talents to the movement he can assure proper recognition of forestry as a major element of the program, and can establish for forestry the social and economic relationships without which it cannot maintain its deserved position in the social and political structure of the country.

But the believer in a forest program governed wholly by considerations of industrial and financial economy, while he should be active in land planning movements, need hardly hope that as a return for his efforts he successfully can establish such a principle of national action. The odds are all against him. There is no probability that one-fifth of the land area of the United States will be allowed to lie idle, and gradually deteriorate through neglect until its social potentialities largely have diminished, on no

grounds other than that the apparent timber requirements of the country can be supplied at slightly lower cost or with less effort upon other lands or in other regions. In support of such a principle there can be advanced time-honored economic axioms, such as the law of supply and demand, lower costs to the consumer through lower costs of production, etc., but in opposition to it there will be a veritable myriad of social, economic, and political considerations which daily are gaining in popular acceptance and importance.

On the other hand, the forester of most liberal social tendencies must recognize the need for wholly sound and sane evaluations of the social and economic contributions of forests, must face the fact that in the long run the demands of forestry upon the capital and energies of the Nation must be equalled or exceeded by concretely demonstrable social and economic benefits, or they will fail to receive adequate public support. Every appraisal of the situation must be rational and realistic, and not governed too absolutely by ephemeral currents of enthusiasm and sentiment.

The wise forester will be the one who will explore his own mind and honestly determine how much of his past thinking on these major problems of forestry has been based on faulty or only partial data. He has been inspired by personal enthusiasms or professional affiliations, or has its origin in his own peculiar psychology which may have been influenced by inheritances of opinion or doctrine based on times and conditions wholly different from those with which he must deal. He will not wholly discard these long cherished ideas, but will store them among his treasures of memory. To qualify himself as an effective member of the present and prospective economic and professional order, he will adopt the alliterative formula of find, filter, focus, face, and follow the facts. In essence, that is the objective of the current land use planning groups; hence it follows that the forester by allying himself with the land use planning movement can derive benefits and returns which will add greatly to his personal and professional effectiveness, can contribute constructively to the solution of a major problem of national economy, and can win for forestry its true and rightful place in the sun.

FORESTERS AND LAND PLANNING

By BERNARD FRANK

Forestry Division, Tennessee Valley Authority

THE subject of land planning has aroused tremendous popular interest in the past few years. The fact that it is now generally recognized as a constructive method of attaining economic stability is a most hopeful indication of the progress to be expected in this direction in the future. Managed land use of one kind or another has, of course, been practiced for centuries. But only recently

has the idea of coordinated planning received the widespread and powerful impetus it now has. This involves more than a consideration of all the possible aspects of land utilization and the related social and economic factors. It also involves the bringing together of all types of governmental agencies, for a common purpose.

Perhaps one of the best statements of

the necessity for comprehensive, large-scale planning is that which appears in the report of the National Resources Committee on State Planning.¹

"Looking back over the last fifty years, we can easily see that lack of planning has caused appalling losses in our American states. Enormous and incalculable damage has been brought about by flood, erosion, drought, stream pollution, ineffective land use, waste of timber and mineral resources—much of which might have been averted by foresight and planning; *human wastage from lack of proper health plans, from bad working and living conditions*, from lack of adequate educational and recreational facilities, insecurity and distress from lack of plans for social welfare. This tragic loss of human and natural resources, with the human suffering involved, might in large measure have been prevented by land planning in our American states.

"The fact is, however, that from time to time some of our states have been dominated by exploiters who were interested in wealth but not always in the commonwealth. These interests were planning while the public slept. The American state need not be a twilight zone in which anarchy prevails, but may become an organized and effective force for protecting and developing the resources of the common weal and helping to make the great gains of our civilization an actual fact in the daily lives of our people."

I think there can be no quarrel with the goal of social and economic planning implied in the foregoing statement; namely, the bringing about in an orderly, democratic manner of the highest possible standard of living, the greatest amount of security, and the maximum possible measure of well-being for the people of

the Nation. This concept emphasizes first and foremost that the ultimate purpose of planning is the enrichment of our human resource; that planning is only a means to that end—not an end in itself. Planning here becomes a living organism, flexible, continuous in operation, and always in close touch with and cognizant of our changing social needs. Applied to forestry, the results of planning are measured not solely in terms of sustained yield, but more in terms of steady, continuous employment under satisfactory working conditions and at sufficient wage returns to permit the enjoyment of a decent living standard by all the workers concerned.

Foresters, both as technicians and as important instruments in the vast nationwide program of restoring our natural wealth, cannot afford to overlook the necessity for considering the human element. If living conditions of communities dependent upon the forest resource can permanently be bettered, that would seem far more satisfactory than a showing of large profits for a small group, or of intermediate accomplishments in planting or timber sales. To bring about such economic betterment, a revision of wage and general labor policies on the part of both private and public forest agencies is definitely called for. Also, a reappraisal of current cutting methods. For even under sustained yield practices, so large a portion of the merchantable timber may be removed at any one time as to curtail materially local opportunities for continuous woods and mill employment. The increased amount and number of individual incomes resulting from such revision of policies will constitute social returns of the most tangible form: increased expenditures within the local communities themselves, as against the usual drain of income out of forest com-

¹ State Planning: A Review of Activities and Progress. National Resources Board, 1935. P. 1.

munities; decreased expenditures for local relief; and a general increase in purchasing power, thereby providing employment to additional workers.

Viewed from the social standpoint, planning for forest land use takes on a very definite regional slant. Without ignoring factors of national importance, it is obvious that the fullest possible long-run development of the resources of a given region and the consequent benefit to its people increase the national wealth. Moreover, the emphasis on creating or expanding *local* opportunities in the management of forest resources makes for the consideration of forestry problems largely on the basis of local conditions. This approach is very definitely in contrast with that of past methods of forest exploitation, when the tendency was to drain the natural wealth from one region after another, regardless of the effects of such exploitation.

Current trends in planning show a realistic appreciation of local needs. There have been set up, in practically every state, planning boards, district and regional boards, and in many cases county planning bodies. Such organizations give assurance that the local aspects of land use planning will be fully developed, while their close and continuous contacts with the National Resources Board and other federal agencies provide the national viewpoint essential to the adequate appraisal of their respective problems. Thus the National Resources Committee points out that, while "it is plain that there are types of situations in which there is either national planning or no planning . . . it is also plain that there are situations in which planning will be local or not at all—problems in which the solution of the question must grow out of the life of the local area as an ex-

pression of its special and local needs. And further, that "wise planning provides for a working balance between local and central, public and private initiative, realizing that progress may be smothered by an excess of one as of the other, and employing its efforts in trying to fit functions to areas in the interest of the whole Nation."²

The Tennessee River basin furnishes a good example of the regional approach to land planning as may be found anywhere in the country. In addition to the established state planning boards and the state and federal research and administrative agencies, there is the Tennessee Valley Authority, a government corporation set up under specific mandate by Congress to undertake as part of its duties, planning studies, and demonstrations in many fields of land use; a corporation that cuts across state lines, maintains close contact with the various state and local agencies, and includes among its personnel specialists in many fields of planning and administration. This type of organization provides an excellent opportunity for realistic treatment of problems of common interest, testing and application of various techniques, and demonstration of tested methods of procedure. Thus the social economists, the geographers, agronomists, culturists, foresters, and engineers of the Tennessee Valley Authority are collaborating in the collection and analysis of the basic data necessary to a proper understanding of the Valley's problems.

Of interest to foresters is the valley-wide survey of forest conditions. This consists of a series of qualitative studies of individual counties or other units. The purpose is to describe the present forest situation, the contribution of the forest to employment and wood-using industry, needs, trends in forest land ownership

² Ibid, p. v (foreword).

d utilization, and the prospects for future development. These factual studies provide for each unit information on the distribution of forest lands by type and condition, rough volume and growth estimates, ownership classes, and use of the forest for timber, game, and watershed protection. Wood-using plants are listed as to size, type, and requirements, and the amounts, kinds, and sources of raw material consumed for various purposes are roughly determined. The amount of employment in forests and forest products manufacture is also obtained, along with other data of value in appraising the possibilities for planned forest development. Recommendations are then drawn up based on the local conditions obtaining in a given unit. These are only tentative, however, because it is fully realized that the county itself, while a convenient area for conducting field surveys and obtaining economic data, is but part of a larger region whose problems must be studied as a whole.

Forestry is only one of many factors entering into the problem of encouraging the orderly development of a given area. Hence, many other types of studies are in progress, all contributing to a fuller appreciation of the complex problems with which the people of this region must deal. These include the rural land classification project of the Land Planning and Housing Division of the Tennessee Valley Authority, wherein major classes of land are being delineated on the basis of physical conditions and stage and extent of agricultural development; the studies of the Social and Economic Section in the fields of tax delinquency, population, relief, public finance; the study of malaria and other health problems by the Health and Medical Service Division; the Industry Division studies of industrial trends, transportation, and marketing facilities; and the investigations of the Geology and Engineering

Planning Staffs. So also many of the projects of the state planning boards, the state forest services, the universities and forest and agricultural experiment stations, are valuable in bringing together in one form or another the basic information upon which planning must be predicated to be effective.

Much progress has yet to be made in correlating the results of these various types of studies, and in working out a better basis for mutual understanding between agencies. For so far as the Tennessee Valley as a whole is concerned, land use planning is still largely in the formative stages. This is understandable in view of the youth of most of the planning agencies now operating in that region. On limited areas long under stable control, as on some of the National Forests, administrative planning has become well established, but even here many problems revolving about the relationship between the Forests and the local communities have yet to be worked out.

Perhaps the greatest service foresters can render as land planners and managers is in this field of community development; namely, through adapting administrative policy and land use programs to the needs of the population most directly affected by the operation of managed forests. Such an opportunity has come to the foresters of the Tennessee Valley Authority. With the idea of demonstrating the economic practicability of a type of forest land management closely coordinated with local community needs, the Tennessee Valley Authority has embarked on the job of developing lands around the Norris Reservoir for forestry and related purposes. Beyond the primary objective of providing protection to the reservoir, emphasis is placed upon the systematic development of every type of utilization that the area will permit. The Tennessee Valley Authority Board has designated this area as the Norris Lake

Forest, and entrusted its administration to the Forestry Division.

Specific objectives of management and details of survey procedure have already been described in the JOURNAL OF FORESTRY.³ Much progress has been made since in working out and applying the long-range program of land management and forest community development, including full consideration of the human element involved in the employment of forest labor and in permitting the use of land by local individuals for various purposes. A wide variety of purposes have been provided for to date, subject to revision as increased knowledge, changing economic conditions, and administrative needs require. As a result considerable modification of the land pattern is in prospect. Inventory of existing conditions shows that 58 per cent of the entire area is in some form of forest, 24 per cent in crops, 11 per cent in pasture, and 7 per cent in abandoned land. Plans thus far developed provide for the organized uses shown in Table 1. It should be understood that these represent major categories only, and do not exclude complementary or subordinate types of utilization.

Reference is made to the fact that, while 1,280 acres have been allocated to groupwise forest worker settlement, actually but one community has thus far been established, and this contains only 2 of the 22 workers comprising the present labor force. Also, that only 10 additional families have as yet been located on the land. Within the next few months, however, it is anticipated that the remainder will be given definite assignments.

The areas listed as crop and grazing lands consist of cleared, fairly level tracts of good soil available for leasing. On the basis of 15 acres of crop land

and 30 acres of grazing land respectively per person, these will provide income to 424 families adjoining or near the Forest. The development and operation of recreational, fish, and game facilities will yield part-time employment to an additional number. Altogether it is expected that at least 500 families, aside from the T.V.A. forest workers, will be benefitted by the program.

So far as direct employment by the T.V.A. is concerned, only a small part of the potential labor force has as yet been taken on. This present limitation is necessary in order to keep administrative costs down to a reasonable figure (28 cents per acre), considering the badly depleted condition of the forest and cleared areas. In view of the small number of workers that could be provided for on this budget, and because of the extremely irregular and long-drawn-out shape of the Forest, it has been necessary to scatter the settlers. This does not mean, however, that the forest worker families are living in isolation as regards communication or access to educational, church, social, or health facilities. All settler sites and houses selected were carefully examined with these considerations in mind, due regard being given to the availability of good agricultural lands and of administrative needs. Nor have considerations of natural environment been overlooked in locating forest communities. The people who live in the Sequoyah settlement, for example, have an outlook which commands a magnificent sweep of the Cumberland Mountains, and in addition a section of the Norris Lake. Of the 12 families now on the land, all children of school age are regularly attending local schools. All families have good access to established rural communities and trading centers outside the Forest. Sanitary facilities have been carefully

³October, 1935. P. 851.

TABLE 1.

PROPOSED FORMS OF LAND USE FOR THE NORRIS LAKE FOREST

Type of area	Proposed use	Acres	Per cent of total
Community sites	Forest worker settlement	1,280	1.1
Cropping lands	Lease to local farmers	2,625	2.2
Grazing lands	Lease to local farmers	10,465	8.9
Game management, game refuge, and game sanctuary reservations	Regulated hunting, breeding, and protection, respectively	15,965	13.6
Forest recreation areas	Operation or leasing of recreational facilities (includes wild area of 1,400 acres for extensive recreation)	3,965	3.4
Natural study areas	Scientific study of natural succession	6,180	5.3
Commercial forest lands	Timber production	76,520	65.5
	Total	117,000	100.0

checked, and in all cases made to conform with T.V.A. health standards. The installation of radios and the use of power boats makes for rapid and effective communication and transportation.

Merely to locate families on the land, even under good living conditions and at fair rates of pay, without preparation in practical forestry, agriculture, and some living would be to leave the job half-finished. All forest workers have therefore been given special instruction in the elements of forestry, in the use of tools and equipment, in practical agriculture, and in first aid. The women have received special training in food preparation, preserving and canning, and other home tasks. Altogether, each family is well fitted for the working and living conditions incident to their residence on the Forest.

Most of the work thus far done has consisted of installation jobs such as fencing, building construction or renovation, road improvement, and of other jobs of more immediate importance, such as timber salvage and fire patrol. Heavier tasks, requiring the use of large groups of men, have been undertaken with C.C.C. labor, as for example, the construction

of the four fire towers, truck trails, and soil erosion control.

It is believed that such a demonstration of integrated land use and permanent forest community development will indicate the feasibility of similar developments on a large scale in other forest regions in the country. On areas containing merchantable timber in quantity and other readily utilizable resources, this type of management can get under way much more quickly and in a more intensive manner from the beginning. In such cases operations can initially be self-sustaining, although in the case of private holdings a lower rate of profits and spreading of returns over a longer period will have to be faced than where no conscious thought is given to community up-building. Whether private enterprise is able or willing to accept these conditions remains to be seen. On the other hand, in cut-over or otherwise depleted areas, where immediate returns are not available, dependence will have to be placed on allotments during the developmental period, and the program will necessarily be more modest in character.

Summed up, the contribution of the forester to land planning depends upon

two factors. First, upon the stability of forest land ownership. Second, upon his own attitude as planner and administrator toward the workers and communities affected by his administration.

Regarding the first factor, it may be stated that without stable and socially responsible ownership it is futile to talk of planning for community betterment, or for that matter of any other kind of planning. Yet today only a minor portion of our forest area is under stable control, and of this the major share is publicly owned.

As to the second factor, if we can think of successful administration less in terms of profits or product yields and more in terms of tangible community benefits derived from employment at decent wages, better living conditions, and security; and if we can look upon the forest worker less as a commodity to be used or discarded at the sole convenience of the management but more as a permanent and active partner interested in giving his best effort toward economic and efficient administration; then we can rightly feel that we have furthered that ultimate goal of planning, the national well being.

DISCUSSION

Mr. F. B. Trenk: Mr. Kneipp said that planning has reached the stage where the mechanics are developed and the blue prints are at hand. I think there is still a tremendous public doubt as to how land use planning is to be put into operation without a lavish public expenditure. Unless the public buys, to what extent can it direct use? We should be most negligent if our discussion stopped at this point. A power of government can be brought into play, and has been brought into play, which has not yet been mentioned—the police power. I refer specifically to its use through what we know as zoning. Zoning is the legal application of a plan to control development, without requiring condemnation or government ownership. It seems to have been the only method, so far, by which a plan can be put into execution without huge expenditures of public funds.

In Wisconsin 23 counties have closed 5,200,000 acres of land to agricultural development and set up alternative uses. This forces into certain channels the plans for land use that the county and advisory

agencies of the state have worked out. The purpose of human conservation that Mr. Frank spoke of has certainly been kept in view; what really inspired that plan in northern Wisconsin was the human wreckage and the wastage of hard-earned tax money in providing local governmental services to isolated settlers. As for Mr. Kneipp's question of state constitutionality, it should be remembered that zoning is an application of the state's police power. So far as rousing opposition is concerned, this zoning is entirely local and voluntary. Backed by 23 counties, it has a record of 40 counties' supervisors favoring it by votes to 1 opposing it—a remarkable example, surely, of the use of governmental authority to solve its own problems.

The U. S. Forest Service has benefited. In every county in Wisconsin in which a National Forest is located, the supervisor and the rangers were called into the town meeting to point out the areas which they were interested in having closed to agriculture. They received cooperation from the town boards, and claims for fire

tious agricultural values were eliminated, the benefit of the acquisition program.

Here, then, is a case of putting into execution a plan of land use that is not predicated upon lavish public expenditures.

Dr. R. K. Winters: Yesterday we considered in some detail the problem of forest management on privately owned forest land in the South. Today we have been focusing our attention upon the operation of organized land planning, as it works to improve human welfare. I should like to try to link these two together, with special reference to conditions as they exist in the South.

I am a member of the Forest Survey organization of the Southern Forest Experiment Station. We have, as one of our objects, the measuring of the present and possible future contribution that the forests of the South can make to the welfare of southern people. One of the tangible evidences of this contribution is the cash income that accrues to the people through forest use. A few figures may serve to indicate the contribution that the forests of the South are now making to our people.

Consider the lumber industry, for example. In 1934 the industrial lumber cut in the South was in the neighborhood of 6,000,000,000 board feet, including pine, hardwood, and cypress. Our study shows that approximately $3\frac{1}{2}$ man-days of labor per thousand board feet is required for the conversion of standing trees into lumber as it goes on the market. This is perhaps a little high for hardwood and somewhat low for pine, but it represents, I believe, a fairly balanced average. Assuming an average working year of 250 days, this represents the employment of 91,000 men on a year-long basis.

Consider, also, the naval stores industry. Our Survey data indicate that there are at least 12,000 naval stores crops of 10,000

faces each, requiring approximately $3\frac{1}{3}$ men each, year-long. This represents approximately 40,000 laborers employed throughout the year.

In my judgment, Mr. Frank reached the kernel of the forest land planning problem when he stated that the contribution of the forests to land planning depends upon the stability of forest land ownership. In some parts of the South, we find private forest land ownership relatively stable. In other parts the opposite is true. Five factors seem to stand out as most important in their bearing upon the stability of private forest land ownership in the South. First I shall mention taxes. The seriousness of the tax problem has already been indicated by a number of speakers. I place second intent of ownership—is the owner a cut-out and get-out advocate, or is he planning on a continued use of his forest lands? Third comes the rate of forest growth; fourth, the cooperation of local people in forest protection—in our region, chiefly fire protection; and last, perhaps not least, forest extension.

Where all of these factors are operating unfavorably, we find unstable conditions of forest land ownership. For this situation I see two remedies. The first has been mentioned here before—public ownership. The second is an active program to make conditions favorable for the stability of private land ownership. I believe that under some conditions public ownership is the best solution to the problem; under others private ownership will, I believe, be the most desirable. Where conditions are favorable for stable private forest land ownership, many private operators are eager to obtain the benefits of stability, keeping their operations continuous and thereby automatically increasing local employment. Already in the South we have a number of private forest landowners who are holding their land for timber growth, and some communities that are consequently provided with a more or less continuous source of employ-

ment. I should like to pause here and ask Mr. Oettmeir, of the Superior Pine Products Corporation, to tell what his company has done in the past ten years for the town of Fargo, Ga.

Mr. W. M. Oettmeir: When I went to Fargo ten years ago with Captain Eldredge, it was just another one of those towns which most of you have seen. It was what was left after the sawmills had gone. That area had been exploited, the best timber had been cut, and the sawmills had moved out, and what few improvements had been put there by the sawmills were absolutely removed. The houses in the town were deteriorating, unpainted, and in a state of collapse. One road led out of our community, and it was passable about half the time, and navigable about the other half. When we first went to Fargo there were two or three more or less dilapidated automobiles there. There was absolutely no communication with the outside world except to get out of town and carry a message yourself, or mail it on the one or two trains a day that came through.

Today the buildings in Fargo are well kept; they are well painted; we have telephone communication out of the town; we have several good roads that can be traveled at any time; there are in the neighborhood of fifty privately owned automobiles—I mean touring cars, not counting trucks that are hauling; there are probably twenty-five or thirty privately owned radio receivers in town; and people have permanent employment. Our population, counting workmen, has increased possibly 30 to 40 per cent during this ten years. The people who are there now are really workmen, whereas ten years ago they did practically nothing but hunt and fish and make a little "shine." They are going right ahead with all kinds of developments. Ten years ago we had in Fargo just a dilapidated building for a schoolhouse. Today we have a school which is,

with one exception, the best school in the county. Financially it is in better shape than any school district in the county, including our county seat. Our people consider that they will really have permanent employment, and they are advancing, both socially and morally.

Dr. Winters: I was particularly impressed with Mr. Kneipp's statement that the job of land planners is to size up the problem and decide what to do, and what is to do it. In that set-up there is, it seems to me, room for much work by the federal and state agencies, and for much private work. In some parts of the country no doubt one will assume greater importance, and in other parts another. I am of the opinion that in the South, where now less than 10 per cent of the area of commercial forest land is under public forest land management, the present opportunity for improving community welfare very largely rests with private industry. The forestry profession, organized or individually, it seems to me, can contribute materially to community development by helping to make conditions favorable for stability of private forest land ownership.

At this point President Chapman was called to the chair.

Chairman Chapman: We will now hear the report of Mr. Rhoades' Committee on Land Utilization.

Mr. Rhoades: I want to make one or two remarks about the report of this Committee, and its personnel. When the President asked me to assume the chairmanship of a Committee on Public Acquisition I did not want to do it, naturally; but he insisted. Then I asked him to select the committee; but he said that was my job. So I asked certain men to serve. I did not know the individual views of any of them, but I thought the fairest way was to select men who represented as many viewpoints

possible. We have on the committee members of the Forest Service, of experiment stations, leaders in some of the forestry schools, private foresters, and state foresters, and I myself happened to be, at the time when the selection was made, with the T.V.A.

We have spent a good deal of time col-

lecting data. We have not had much opportunity to get together, until we came here; but we have corresponded, and certain groups have got together from time to time. What we brought forth I will now read.

At this point Mr. Verne Rhoades read the following Committee Report:

REPORT OF THE COMMITTEE ON PUBLIC ACQUISITION OF FORESTS

FUNCTION OF THE COMMITTEE

A LETTER transmitted by President Chapman on December 28, 1934, to all members of the Committee on the Public Acquisition of Forests, defined the function of the Committee as follows: "To study and report to the Society upon the new developments and general relationships of public acquisition as affected by national versus state relations, Tennessee Valley Authority, submarginal land purchases under the A.A.A., and any other new phases of public land policy."

As the Committee conceived the scope of the work ahead, it was to begin not only with subject matter not specifically considered by Professor Hosmer's report last year, but also to re-analyze the acquisition program discussed in the Cope-land Report, and to consider the soundness of that program in relation to private forest holdings and state forest acquisition. The Committee accordingly conceives that its fields are rather comprehensive, and comprise a study and analysis of existing federal statements of policy and objectives, the intimated lines of action, and the actual physical accomplishments which further clarify and express these policies, in order that it might determine and weigh their probable effect on the activities and

prerogatives of the states and of the private landowners.

It was impossible to check all of the data that have been assembled by various agencies engaged in acquisition of forest land. Efforts to obtain clearcut statements of policies and objectives were not always successful.

SCOPE OF THE FEDERAL PROGRAM

A major objective of Forest Service acquisition program, as stated in the Cope-land Report, is that an area of approximately 134,000,000 acres of forest land be added to the federal domain by purchase. This figure in the National Resources Board Report is reduced to approximately 131,000,000 acres. For other federal agencies engaged in acquisition of forest land the amount to be acquired is as follows:

	Acres
National Park Service.....	23,000,000
U. S. Indian Service	25,000,000
Rural Resettlement Adminis- tration	75,000,000 ¹
U. S. Biological Survey.....	38,000,000 ¹
State forests	58,000,000
State parks	7,000,000
State game refuges.....	2,000,000

Of the areas that should ultimately be

¹ Percentage of forest land unknown.

in public ownership, the National Resources Board report (page 213) states:

"It is believed that public acquisition offers the only sound and workable solution of the forest problem in areas where growing stocks have been heavily or wholly depleted by destructive logging, fires, and other causes; areas where profitable operation for timber production may be impossible for private enterprise but where the public interest in watershed, wildlife, and recreational values can be served only by organized management; areas which might be operated profitably by private owners, but on which the public need for recreation and related uses makes public ownership highly desirable; privately owned forest lands interspersed with existing public forests and purchase units; lands submarginal for agriculture for which the highest use is forestry and related uses, and which could not be profitably converted to forestry under private ownership; and stands of timber otherwise destined to destructive exploitation in private ownership because of excessive capital costs or for other reasons, but only as a last resort and subject to the provisions mentioned above. (The Forest Service recommends that the public acquisition program include 90 billion feet of standing timber in the Northwest.)"

And on page 237:

"As substantial and undetermined portions of the lands recommended for acquisition are now a part of the public domain, it is difficult to estimate as yet the total amount of land which is contemplated for state or federal purchase, or the ultimate acreage of land which would be in public ownership should all of these acquisition programs be consummated."

As generalized statements of policy, these declarations seem sound; however, their interpretation provides for unlimited latitude of action, and the very broadness of their expression leaves much doubt as to the actual intent. Issues have arisen

as to the amount and character of land and the rate of acquisition by public agencies according to the statements of policy above outlined. In addition, criticisms have been made as to the extent to which cooperation between the several agencies has been effected, and in particular as to the degree to which public acquisition is in accordance with statements of principle, relative to the safeguarding of the interests of private timber production.

ACQUISITION BY THE T.V.A.

So far as this Committee has been able to ascertain there has been no public statement from the Tennessee Valley Authority regarding the purchase of forest or submarginal land by this agency for its own purposes.

The Authority has already made rather extensive purchases of land around Lake Norris. The total acreage may run up to 125,000 acres, not including the land required for the lake bed below the 1,020 foot contour. The main purpose is to protect the shore line of the lake.

The Authority has not as yet adopted a similar policy for other power developments, although it does contemplate buying sufficient land around the shore lines of the various lakes for protection.

It is important, however, to observe that the Authority has requested other purchasing agencies, notably the U. S. Forest Service and the Rural Resettlement Administration, to consider active acquisition of forest land and submarginal land areas throughout the Valley. In compliance with this request the National Forest Reservation Commission has greatly extended the limits of former purchased areas, and has added several new ones. Certain submarginal problem areas, located and investigated by the Forestry Division of the T.V.A., have been recommended to the R.R.A. for acquisition. The

al acreage of these problem areas is not known to the Committee.

The T.V.A. is willing to cooperate fully with other public agencies that are engaged in purchases of land within the Tennessee Valley, but is not now willing to enter upon extensive buying itself, other than what is required for the full development of its power program, including the protection of its lake shores.

ACQUISITION BY THE R.R.A.

In so far as the Committee could ascertain the facts, the accomplishments are substantially as follows to date:

1. Purchases have been made of 1,000,000 acres or more of widely scattered holdings. A considerable portion—undetermined as to amount—will be more suitable for forests than any other purpose.

2. Options have been taken on approximately 12,000,000 acres, but there is no certainty as to the degree to which these options will be exercised. As a matter of fact, many have already lapsed.

3. Apparently the R.R.A. has a free hand in acquisition of lands. The only restrictions are the availability of funds and the interpretation of the program by the federal bureau charged with the conduct of the activity.

The projects are varied. Some are set up with the idea of buying out and removing farmers from submarginal areas to better lands elsewhere. Other projects result in the removal of but a few farmers who may be in the purchase area, but provide for the acquisition of substantial tracts to be administered and used by other public agencies.

4. The R.R.A.'s policy at the present time appears to be to turn over the acquired lands not suitable for their resettlement purpose to various federal and state agencies for management. This may be done either on a long-time lease basis or

as a direct donation. The entire program, however, can be carried to completion only on the basis of a long-time effort.

ACQUISITION BY THE SOIL EROSION SERVICE

D. S. Meyer, Chief, Division Cooperative Relations and Planning, wrote as follows on November 30, 1935:

"Up to date no funds have been made available for land purchase; consequently, no definite or final policy has been established. Most of the lands for nurseries have either been turned over from the other bureaus or have been provided by state experiment stations and others under cooperative agreement. . . . we are endeavoring to work out the proper procedure and the proper relations with the Forest Service and the Resettlement Administration, so that we may coordinate our work more closely with these agencies in regions where the Soil Conservation Service has projects, and so that we may cooperate more fully with the states under the proper use of the provisions of the Fulmer Act and other authorizations which provide for land purchase by the Resettlement Administration and the Forest Service."

ACQUISITION BY THE U. S. FOREST SERVICE

The Weeks Act, passed in 1911, initiating the purchase of forest land by the Forest Service with the major objective of watershed protection, was later enlarged in 1924 by the passage of an amendment to the Clarke-McNary Act which has for an additional objective the purchase of timberland for timber production. Establishment of purchase areas within the timber growing region of the East was a natural consequence. Forest Service acquisition moved along at a moderate rate until 1935. From 1933 until recently the rate of purchase has been greatly accelerated. In order to more fully realize the possible permanent benefits from the social stand-

point of the work of the newly organized C.C.C., to save transportation, and to further the original program, large sums of federal money were made available for acquisition. This very briefly summarizes the progress of Forest Service acquisition.

FEDERAL AND STATE COOPERATION

It appears that the Forest Service has not established purchase units prior to receiving the sanction of legislative bodies and the approval of the higher state officials. But there has not always been agreement between the Forest Service and other state officials with respect to future federal ownership. It should, however, be pointed out that the states in many instances, and in some cases perhaps the federal government, have not themselves had adequate forest programs. "The states, however, as political, economic, and social units have been functioning a long time, and it would be wise to take advantage of the power that would be gained through state cooperation in federal matters." A splendid vehicle for this cooperation is the Fulmer Act.

The more serious situation is the conflict between public and private ownership. This is particularly acute in those states east of the Great Plains where public ownership is rapidly coming to the fore, and the institution of private land ownership will be materially affected. Public ownership brings with it a need for readjustment of communities, virtual stoppage of taxes (which is more or less offset by various forms of subsidy), a readjustment in the habits and economy of those people living near or within the area—in brief words, a sweeping change. The Committee feels that because of the change wrought by the transfer of large areas of land from private to public ownership, the greatest of care must be exercised to avoid the creation of economic and social problems which cannot be readily met by any public agencies, state or federal, since

such agencies are slow moving, on the one hand, and subject to violent overturn brought about through political hysteria on the other.

As intimated earlier in this report, the Committee feels that the plans for large scale public ownership are based upon inadequate information. It encourages a greater amount of public forest ownership than exists at present, but at the same time feels compelled to state that it cannot fully concur with the recommendations of the Copeland Report and the National Resources Board Report for haste in the execution of sweeping plans not based on more complete and accurate data.

CONCLUSIONS

We believe that in the acquisition programs of the various agencies there should be definitely kept before the minds of the purchasing bodies the fundamental fact that the goal of foresters is to accomplish the practice of forestry and wise multiple land use upon all suitable lands, be they private, state, or federal.

We believe that the effort to accomplish the practice of forestry upon private lands should hold the highest priority in the minds of all forestry agencies, and that land ownership by states is important in the stabilization of state organizations.

We believe that certain emergency and permanent federal agencies, uncoordinated and apparently with no definite policy, engaged in the acquisition of lands have embarrassed private and state land programs.

We believe that the T.V.A., the Rural Rehabilitation and Subsistence Homestead programs, and the present program of the Soil Conservation Service in so far as they relate to land acquisition do not interfere with the relation of states to national and private land problems.

We believe that in the resettlement program of land acquisition, there is an in-

interference with private land problems through a threatening of the standing of existing state organizations, due to a lack of definite policy as to ultimate control of the land, an interference with state and national forestry organizations due to lack of coordination as to purchase areas, increased prices, and confusion as to objectives.

We believe in a sound coordinated federal and state land acquisition program, and federal assistance in the acquisition of state forests.

We believe that the federal Forest Service policy, or the policy as we have been able to understand it, may:

1. Cause confusion with state agencies engaged in land acquisition.
2. If carried too far, cause embarrassment to state agencies of lesser size and smaller finances.
3. Handicap state agencies within certain areas.
4. Defeat the purpose of the state function, if in the face of large expenditures of federal funds it becomes practically impossible for smaller states to interest the state in a state purchase program.

RECOMMENDATIONS

The Committee recommends:

1. That measures be instituted for the effective coordination or centralization of public land acquisition programs, whatever the agencies and their purposes may be, and that definite statements of policies and objectives be made public.
2. That the objectives and needs of the separate agencies be given consideration in any immediate program, as well as in the ultimate plan.
3. That following an extensive survey of those portions of the country where the need of public land acquisition is indicated, intensive surveys or land classifica-

tion programs be made in order that there may be adequate and accurate information available for sound planning.

4. That until such time as these studies are made available, public acquisition by all agencies proceed only at a moderate rate. The Committee wishes to emphasize that present knowledge and experience is inadequate to permit of the planning or the execution of plans involving sweeping economic and social changes within a short period of years. Furthermore, the Committee wishes to suggest that the rapid economic changes in the past and the many errors in public judgment dictate the necessity for careful and measured procedure, in contradistinction to hasty and unstudied action.

5. That all public agencies charged with the acquisition and administration of forest lands or the development of wild lands renew and amplify their efforts to obtain the ends desired through private forest land management. There is a direct connection between federal cooperation in state forest acquisition and assistance to the private landowners.

6. That we recognize need of early action in the purchase of 90 billion feet in the West. The Committee realizes that the public acquisition of sufficient of the remaining virgin timber on the West Coast to stabilize the lumber industry of that and other affected regions is a possible solution to a serious economic problem. It is, however, inclined to believe that this problem is one separate and distinct from the general problems of public acquisition and administration. It is somewhat apprehensive that the entire issue of public land acquisition and administration may become somewhat confused if strong representations are made to include this proposition as a part of the general public land ownership program, and suggests that it be distinctly and separately considered.

Mr. C. A. Gillett: In the first part of the

report, it was stated that the Resettlement Administration had a definite policy that the submarginal land areas would be turned over to a state agency or federal agency. Was that policy in writing from the Resettlement Administration, and, if so, who signed it?

Mr. Rhoades: No, I do not have it in writing.

Mr. F. G. Wilson: I do not think anyone else has anything from them in writing. As you recall, we tried to get something definite at the annual meeting of the Association of State Foresters, in Vermont. At first we heard that the Resettlement Administration was going to acquire the lands and turn them over to the other agencies. Now we learn they are starting an organization of engineers, foresters, game experts, and so forth, and the policy now is that they are going to develop these lands before they turn them over to the administrative agency. In other words, another conservation agency, overlapping the fields of the state forest departments and the federal Forest Service, Biological Survey, and similar agencies, is being built up under the Resettlement Administration.

From the standpoint of land planning, I want to testify to a situation in our own state. Mr. Trenk told of the 5,200,000 acres which are closed to agriculture. The doors are locked, and no further misuse can occur on those areas. We have tried, working through the State Planning Board, to get the Resettlement people to undertake the task of relocating the established non-conforming users who were legally established at the time these ordinances were enacted. It is necessary to remove only about half of them to clean up the situation, from the standpoint of maintaining roads and a school for one or two families. We want to get relief for the local units of government, as well as to relocate the people where they will have better opportunities.

We have worked with Resettlement and its predecessor agencies, and, so far in Wisconsin, we have one case of resettlement based on zoning. That was done because the director of the preceding agency, the State Rural Rehabilitation Corporation, exceeded his authority and bought 100 acres of land. In addition, Mr. Rolan, who, with Mr. Trenk and myself, worked with these 23 counties in enacting the zoning ordinances, took some time during his vacation, and the Conservation Department provided some equipment, so that in 13 working days he put up, with relief labor, a neat cabin of peeled cedar poles that were purchased. He also put up a barn and put down a drilled well, brushed 17 acres, stumped and plowed 10 acres and put 3 in green rye, all in the 13 days. But it took Resettlement six months to place the selected family on the property.

Mr. Kneipp: If this meeting wishes to act on this report without getting all the facts regarding the federal forest land purchase program, I will not intrude; if the meeting wants all the facts, I shall be glad to state some which are not covered by the report.

President Chapman (resuming the Chair): Go ahead.

Mr. Kneipp: The report pictures the public acquisition of 224,000,000 acres now in private ownership as a definite objective, a studied intention, of the Forest Service to reduce private ownership of forest land to the extent indicated. That is an erroneous impression. A truer picture could be afforded if the report said that it was the conclusion of the Forest Service that, because of fundamental economic and other conditions, permanent and constructive management of 224,000,000 acres of the lands now in private ownership could not be expected, and that consequently, if the lands were to be permanently and properly managed, the

ould have to be taken over by public agencies.

This conclusion was reached by acceptance of the basic premise that, except in rare instances, permanent private management could not be expected if the returns therefrom did not equal or exceed the full costs of such ownership and management; that very few private owners would continue to drain their capital to support a forest at cost more than it yields, and that consequently, if such types of forests are to be permanently protected, it will have to be by public agencies which can justify the cost by reason of collateral benefits other than monetary returns from sales of timber products, as, for example, watershed protection, provision of proper habitats for wildlife, recreational opportunities for the public, and other intangible benefits.

The problem was to approximate the acreage and distribution of actual or potential forest lands which fell inherently into these categories: the lands of basically low productivity, those which could produce only inferior species or forms of timber, those where the rates of growth were so low or periods of growth so long as to create impossible burdens of interest and taxation, those where the factors of accessibility and transportation militated against profitable conversion of timber products and those where the reestablishment of a forest cover and capital would entail heavy initial outlays and long continued costs of administration, which could not be adequately recouped by the monetary returns from the timber commodities and forest services realizable through private action.

Effort was made to define the minimum requirements in relation to each factor in the equation. The next step was for the group of men most familiar with forest conditions in the United States to apply these requirements to each of the forest regions, and to approximate the propor-

tions of forest area which fell below the practicable limits of private action. It was by this process the conclusion was reached that 224,000,000 acres of the lands now in private ownership would permanently make direct monetary returns commensurate with the costs of their proper management only through public action. If the economic aspects of the problem have been correctly stated and interpreted, the political conclusions are inescapable, unless all social considerations are swept aside and foresters as a group take the position that the future destiny of doubtful or submarginal forest lands shall be governed wholly by the degree to which private management sees in them opportunity for monetary profits. The acreage figures used are approximate only and, of course, may be in error by as much as perhaps 20 per cent. However, they are merely a forecast of possible future action, which would in any event be governed by the determined facts, and thus, over the years, automatically adapt itself to the true conditions.

The report now before the meeting is predicated upon the Copeland Report of 1933, rather than the National Resources Board Report of two years later, which suggests a smaller acreage for ultimate public ownership, although still one of large proportions. According to my understanding, the data used in the latter report represent in large measure the cooperative effort of state foresters and other state officials and organizations, thus implying that the conclusions expressed at least generally meet with their approval.

The genesis of the present National Forest land purchase program was a meeting at Asheville, N. C., in 1899, called and participated in by people of that section who were alarmed at the growing spread of forest devastation. In time, this group allied itself with similar groups in New England, who likewise were con-

cerned over the ultimate consequences of destructive forest uses. The movement was debated for a dozen years, by congressional committees, by semi-public groups, by eminent constitutional authorities, and a wide array of other favorable and unfavorable interests. It culminated in the act of March 1, 1911, known as the Weeks Law.

The plan formulated immediately following the passage of the Weeks Law contemplated the purchase of 5,000,000 acres in the southern Appalachian region, and 600,000 acres in New England, later increased to 1,000,000 acres. Forest industry interposed little dissent to this program; many leading forest landowners saw in it a relief from burdens they were willing to relinquish, for an equitable consideration. In time, the program was extended to western Arkansas, partly to facilitate consolidation of the large acreage of unreserved public domain withdrawn for National Forest purposes, and partly to protect important tributaries of the Mississippi. Later it was extended to northwest Pennsylvania, specifically at the behest of the Pittsburgh Flood Control Commission, which was anxious to obtain adequate protection of the watershed of the north fork of the Allegheny. In both these extensions conflicts with organized efforts and private forestry were avoided, and the forest landowners concerned offered little general dissent.

In 1923 definite form was given to a growing feeling that the Weeks Law, limited as it was to the upper headwaters of navigable streams, was inadequate to meet situations developing in the northern Lake states and in parts of the southern pine belt. A Senate Select Committee was appointed and held extensive hearings throughout the country. Largely as a result of its findings, the Clarke-McNary Law of June 7, 1924, was enacted, authorizing purchases for timber production as well as for watershed protection.

The first steps under the enlarged program were to select a series of relatively small areas in the northern Lake states and the southern pine belt, the dominant idea being that they were to serve as areas upon which to determine by experimentation, and to demonstrate, the most practicable types of forest-land management and utilization in the regions involved. In selecting these areas consideration was given to the wishes of the State Conservation Departments, the county officials, the owners of the timber lands involved, and other parties in interest. In some cases the State Forester was not personally in accord with the program but it met the approval of the State Conservation Department to which he was subordinate. Action was concentrated largely upon cut-over denuded lands, so as to place under federal control the largest acreage obtainable with the limited funds then available. So much was this true that the Forest Service was severely criticized for unwisely expending public funds in the acquisition of such poor lands. In the Lake states the slogan "The Worst Firsts" was freely used by many a forester. The frequent demand was that the Forest Service should recommend purchase of well-stocked lands of high forest quality or of lands supporting merchantable timber to which sustained yield principles of management immediately could be applied. According to the most vocal elements, the chief indictment of the then existing Forest Service policy was not that it competed with private forest management, but rather that it did not sufficiently compete there being, of course, some exceptions who felt that federal ownership and management of extensive areas of even cut-over land carried the threat of ultimate overproduction, which would militate against private operations predicated upon the economy of scarcity.

In 1933 the entire situation changed radically. The Civilian Conservation

Corps came into being, and need existed for public ownership of lands upon which the energies of the Corps could be employed with the greatest and most permanent benefit to public interests. There became available for land purchase funds greatly exceeding all previous levels. More important still, greatly increased emphasis was laid upon the social aspects of public land management, the provision of employment, and stabilization of the life of communities threatened with obliteration by the early liquidation of the timber resources upon which such communities were totally dependent for economic life. Early attainment of the newly established objectives necessitated public ownership of some lands supporting timber of commercial age, quality, and volume, and of other lands in intermediate stages of regrowth, so that actual sustained yield could be made a prompt reality and so that revenues would accrue to dependent agencies of local government.

It was only when the United States began to acquire lands well stocked with immediately available commercial timber that the conflict with private initiative in forest management became acute. Certain bodies of timber were greatly desired by operating companies, but not through purchase from the federal government. Any assumption that such operating companies intended to cut the lands on a sustained yield basis and with a view to maintaining the economic life of dependent communities is totally lacking in factual support. No circumstance indicated any private intent to do other with the timber than to liquidate it as fast as mill capacity and markets would permit. Notwithstanding superficial contentions and allegations, foresters who consider and express views on this subject actually must make a choice of definitely opposed philosophies of forest economy; one, a philosophy of sustained-yield management designed to perpetuate social, economic, and political institutions, the other, a

philosophy of quick liquidation motivated entirely by the objective of maximum monetary return, with only secondary or no consideration of fundamental social, economic, and political factors.

Conceding that to the degree I have indicated the federal program has conflicted with private forest management, it seems worth while to define the relatively small degree of that conflict. Of large single well consolidated holdings, susceptible in themselves to effective private management, only 15 have been approved to date; these containing a total acreage of 305,974 acres and involving a total expenditure of \$6,255,811. One of these, the Waterville area in New Hampshire, was acquired only after years of aggressive demands by New England interests; another, the Tionesta area in Pennsylvania, was strongly advocated by the Pennsylvania Forestry Association and a wide array of other interests; a third, the Middlebury College area in Vermont, likewise was supported by state-wide public sentiment; so that actually the true measure of conflict, if one exists, is reduced to about one-quarter million acres of timberland and about \$4,000,000 worth of commercial stumpage.

To determine just how far the Forest Service had gone in recommending purchases of reasonably well stocked land, a tabulation was made of all cases in which the appraised value of the soil and young growth was less than one-third of the total consideration paid for the land. That was a liberal classification, since an average of one or two thousand board feet of timber or a few cords of wood per acre would easily amount to more than twice the value of land averaging only \$2 or so per acre. Yet on the basis of that classification, only 18 per cent of the expenditures for land acquisition has gone into lands where the soil value itself was less than one-third of the purchase price.

The feeling that the United States should

refrain from large-scale purchases of productive forest lands or well timbered lands apparently is far from unanimous. Scarcely a week passes without some new project or proposal being submitted to the Forest Service, sometimes through Senators or Representatives, sometimes by delegations of parties in interest, by no means always the owners of the lands. The general attitude of the 80-odd members of the House of Representatives who have established Purchase Units within their congressional districts would seem to indicate that the federal forest land purchase program finds merit in the eyes of many of their constituents, and disfavor among only a few. It seems evident that wide-spread objection to the federal program, if it existed within the regions in which that program is being carried out, quickly would find expression in the halls of Congress.

The report now before this meeting pictures rather tragically the financial hardship and injustice to counties and communities arising from government ownership of the taxable resources within their borders. It does not seem to pay much attention to the fact that 25 cents out of every gross dollar of National Forest receipts is returned directly to the county, while an additional 10 cents is made available for the construction and maintenance of roads and trails. Few privately-owned properties or utilities pay in taxes as much as one-fourth of their gross income. On the contrary, the proportions usually range around 5 to 7 or 8 per cent. The report does not seem to give adequate recognition to the enormous acreage of forest land now tax delinquent, and reverting, or subject to reversion, to county or state ownership because of that fact. The studies for the National Resources Committee Report showed that in 85 per cent of the forest area of the United States there were 50,000,000 acres of forest land upon which taxes were delinquent more than three

years, in addition to the acreage which actually had vested in county or state ownership through tax reversion.

The situation raises an interesting question as to the relative degree of injustice to which a county or community is subjected when the federal government takes over lands within its limits, and thereafter manages the lands in such a way as to promote their optimum productivity and pays to the county one-fourth of the gross value of all products, as against a plan of resource utilization under which all natural resource values are liquidated, so that the lands for a long period of time will be inherently incapable of making any appreciable tax contribution, or may in fact cease to make any tax contribution whatever and thus revert to public ownership, with its attendant costs of reclamation and management.

The report does not make it wholly clear as to why a community will suffer more through a federal program which, under sustained yield principles of forest management, will guarantee the community a permanent and reasonably adequate supply of raw materials upon which to found or maintain its economic life, as against a program under which the natural resources will be harvested as rapidly as possible, leaving relatively little to maintain the community after the process of resource liquidation is completed.

There is no desire to hamper or discourage private forest management to its fullest attainable degree. But there should be some interpretation of what actually constitutes forest management, either public or private. There should be a realistic appraisal of the practicalities and probabilities of private management in the United States under now prevailing conditions. In Germany, for example, when an owner has cut the timber from a part of his land, he proceeds immediately, or as rapidly as silvicultural conditions will permit, to replant the area, at a cost of

from 150 to 225 marks per hectare, knowing full well that a third or a half of a century will elapse before he derives any appreciable returns from his planting investment, and that a century or a century and a half will elapse before the full return is realized. When there exists in America a similar willingness to postpone immediate realization of the total value of stumpage, or to reinvest in the forests a reasonable proportion of the value of the timber cut, then private forest management in America will offer promise of meeting the Nation's social and economic requirements. But how many instances are known today where, with any degree of assured stability and long-time certainty, there is such a guarantee of effective private management of forest lands, except in isolated instances where fixed investment or peculiar marketing advantages create in relation to limited areas a condition which is distinctly an exception to the general rule?

Mr. A. E. Wackerman: I think the Committee has rendered a splendid report. The subject has been given a great deal of thought, and explored thoroughly; and I hope the report will be adopted by the meeting here, and by the Council later. As the report says, much of the acquisition has been based on insufficient information. It is only fair that we await this information, especially when it is so nearly ready. I refer to the Forest Survey, which will have a great deal of factual information about forest conditions.

Mr. Kneipp spoke of the government having to acquire merchantable timber to save it from destruction. That's not exactly correct. I happen to know of one large tract of timber that was acquired at the back door of a mill that has been operating forty-eight years and still has no end in sight. That company is cutting over some of its land a second time, and I do not believe Mr. Kneipp would find that that company would treat the tract in question quite so badly as he might fear.

Mr. A. G. T. Moore: I have been listening, and learning, and have intended to say nothing, but I cannot allow Mr. Kneipp's reference to the industry in the old-fashioned way to stand unchallenged. He has been implying that wherever properties are being operated there is devastation. I would like to ask Mr. Kneipp how many miles he has traveled in the South, how many private industries he has visited, how well he has explored the policies of private operation during the past year or two.

He has been to Germany and learned a lot; but the population of the United States is not concentrated into an area the size of Michigan and Wisconsin and Minnesota. The conditions that apply in Germany should not necessarily be imitated here. I think Mr. Kneipp properly recognized that we as a Nation are a little younger than Germany; and we grew up under conditions where transportation permitted the interchange of commerce and a movement of people. That is why we all speak the same language, and live in peace and harmony, although we are divided into 48 separate, independent states, that will continue to keep so, and keep in mind the Bill of Rights, and keep in their power, I hope, everything except that which is specifically given to the federal government in the Constitution.

Mr. Wackerman and I have traveled thousands of miles in the last year and a half. On every trip we met surprise after surprise; people whom I thought of in all my years of contacts with them as in the cut-out and get-out class. Only last week we found one who, since 1924, has been engaged in a program of purchasing well stocked areas, and, up until the time of the depression, purchased 250,000 acres of such lands to guarantee his future operations on a continuous basis. I say this, and I know it is not going to be challenged by anyone who has been on the ground and has tried to ascertain the facts with respect to the man-

ner in which the private owners are operating their properties: that there is not today the devastation or the cut-out and get-out policy or the treatment of timber as a mine such as existed twenty or thirty years ago.

Mr. R. B. Goodman: May I add one thought to what Mr. Kneipp has said? I do not know how it applies to the South, but I know it does apply to the Lake states situation. We must have public cooperation through the federal government and the states if we are going to prolong the life of our industry in the Lake region. I like very much the minority report¹ as an addendum to the Committee's report, because it does picture the situation as to the remaining small stands of merchantable timber in the Lake states region, which are doomed to be cut immediately unless we can get stabilized ownership. I am trying my best to develop a sustained yield for our operation, but I cannot live long enough to do it, and I have to depend upon the cooperation of public agencies to make the town of Goodman a permanent community.

Mr. Kneipp: May I make this one more remark? These complaints came to the National Forest Reservation Commission on January 12, at a meeting before which Mr. Cary, Captain Woods, and others appeared. The Commission said: "Give us facts, something we can analyze." If this report would specify where the wrong is being committed, the Commission will be glad to consider it.

Dr. Robert Marshall: Mr. Moore gave some personal evidence of what he observed in his travels. During the past three years I also have traveled thousands of miles, not in the South but in equally important timber producing sections, in the Lake states, the Pacific

Northwest, and California. Like Mr. Moore, I got many surprises. My surprises were how the average operator could leave the land he cut over in such a completely deplorable condition.

Capt. J. B. Woods: I am not going to argue this question. I will say in partial response to Dr. Marshall, that I live in a community in the state of Washington which is a planned community, and which is a focal center of a sustained yield forest program of 500,000,000 board feet per year. That is not guess work, except that it may be conservative on the low side. But with respect to Mr. Kneipp's comments on this wave of opposition, I'm not going to make any argument. We have had one hearing before the Forest Reservation Commission, and we probably shall have others; but I would like to say that the industry and private owners generally, in my opinion, have never become articulate on this question; have never been able, for various causes, to exchange and analyze their feelings and the information on which they could base conclusions, until within the past three years. This criticism may have appeared to be just a matter of opposing everything in sight, but, we have, in cooperation with the federal Forest Service and the states, we believe, a joint forestry program, of which this proposal for federal forest acquisition is a part, and the feeling about acquisition, nebulous though it be, is, I believe, a very definite forward step. We are, for the first time, really articulate, because, for the first time, we had the mechanism for getting together and exchanging ideas and finding out where we want to go. And one of the proposals we have definite views about is acquisition.

I admire that report very much. I do not agree with all of it, but I think it is a very fine first step for the Society to take at this time.

¹ Not submitted for publication.—Ed.

Mr. Baker: It has been brought out that in Germany the private owners are practicing forestry today, and in the United States they are not practicing forestry as the forestry profession would like. May I suggest that probably there was a great revolution in Germany, extending over a long period of time, and that we must view this question from the standpoint of the beginning of forestry on private lands today, and contrast it with the conditions that prevailed in Germany when it, too, was a rural country.

Mr. Wackerman: I move the approval of the report by the meeting here, and that it be referred to the Council for further action.

The motion was seconded.

Mr. C. E. Behre: I should like to ask the intent of the word "approved."

Chairman Chapman: The word "approved" does not mean approval of everything in the report, but signifies that a piece of work of commendable character has been done, and the meeting expresses approval of the Committee for its work.

Prof. P. A. Herbert: I offer an amendment, to substitute "submitted."

Chairman Chapman: All in favor of the amendment say "Aye." The question is on the submittal of the report to the Council. All in favor say "Aye."

Upon vote of the meeting the report was submitted to the Council; and the session adjourned.

WEDNESDAY MORNING SESSION, JANUARY 29, 1936

SUBJECT: THE CIVILIAN CONSERVATION CORPS

Chairman: C. F. Korstian

Chairman Korstian: One session of the annual meeting of the Society in Milwaukee, two years ago, was devoted to a discussion of the Civilian Conservation Corps. That was soon after it was born. Since then, much has happened in the working out of policies. Now the question of a permanent C.C.C. looms up. Discussion of the policies governing the work of the C.C.C. will be opened by Mr. Fred Morrell, Assistant Chief of the U. S. Forest Service in charge of Emergency Conservation Work.

The Chair then called for presentation of the following papers:

EMERGENCY CONSERVATION WORK POLICIES

By FRED MORRELL

U. S. Forest Service

CONSIDERATION of Emergency Conservation Work logically breaks down into three principal subjects: (1) enrollees and their welfare, (2) work projects, and (3) organization for conduct of the work. I shall attempt to discuss the subject under these divisions.

ENROLLEES AND THEIR WELFARE

State and local quotas have, to date, been determined by two factors—relief load, and population; but due to the nation-wide extent of unemployment, quotas have not deviated greatly from the population ratio. The relief factor would presumably be eliminated in any plan for a permanent C.C.C. In that case, it is my thought that state quotas should be based on population, and distribution of quotas within a state should be determined by state authorities under broad principles laid down by the federal government.

These two principles should, in my judgment, be established: (a) that boys be selected from those families which are least able to send them to school or afford

other training needed to fit them for useful citizenship, and (b) emphasis should be placed on enrollment of boys from large urban centers, because boys of the urban centers need most the out-of-door training and education which the camps afford.

Civilian Conservation Corps work should be considered first as a social, and second as a work project, and it should therefore, be for those boys who most need its benefits rather than for those who would contribute most to accomplishment of the work projects, or be most easily supervised, or perhaps even for those who would gain most from the experience.

Civilian Conservation Corps work should be regarded as a youth movement with eligibility limited to the age group whose experience in camps will contribute most to a solution of social and citizenship problems. The training of boys in their 'teens will, on the whole, be of more benefit than their training after the twenties are reached. Crime statistics, which are important to consider, clearly demonstrate that useful employment, along with

proper training, is likely to bring much larger returns if given the boy before maturity.

It is my judgment that the minimum age of 17 years should be retained, and the present maximum of 28 years should be reduced to 21 years. This would result in some less work being accomplished, but social aspects are to control, enrollment would be limited to the younger age groups. There are over 4,000,000 young men of these age classes from which to select, and no difficulty will be experienced in obtaining the desired number. A million or more reach the age of 17 annually, and the pressure for jobs is assumed to be greatest within the age limits of 17 to 21. To the extent the Corps is confined to these age groups, this pressure will be reduced; and moreover, this will reduce the pressure for jobs among the more mature classes.

Table 1 shows the distribution of enrollment between age groups during the enrollment period, June 12 to August 1, 1935, when the minimum age was 18. Table 2 gives similar data for the October enrollment, when the minimum age was 17. To make 21 the maximum age would not greatly change the age complexion of the Corps.

The elimination of local experienced men is recommended. Their inclusion in

TABLE 2.

AGE DISTRIBUTION OF 76,362 JUNIORS
SELECTED AND ACCEPTED IN THE CIVILIAN
CONSERVATION CORPS
October 1-31, 1935

17-28 yrs.	New applicants	Re-se- lectees	Total number	Per cent
Age 17.....	17,219	—	17,219	22.56
Age 18.....	19,194	843	20,037	26.25
Age 19.....	8,065	2,624	10,689	14.01
Age 20.....	4,939	2,791	7,730	10.12
Age 21.....	3,632	2,030	5,662	7.41
Age 22.....	2,781	1,419	4,200	5.50
Age 23.....	2,269	957	3,226	4.22
Age 24.....	1,755	658	2,413	3.17
Age 25.....	1,263	529	1,792	2.35
Age 26.....	899	364	1,263	1.65
Age 27.....	965	193	1,158	1.52
Age 28.....	836	103	939	1.24
	63,817	12,511	76,362	100.00

the Corps was (a) to provide experience and leadership, and (b) to give employment to men who had previously worked for the Forest Service. Needed experienced men should be supplied in the overhead and facilitating personnel, not through enrollment, and local employment should be provided for as needed out of other appropriations.

The monthly wage of \$30 has been justified during the period of the emergency because of the assistance given to dependent families. This wage is, however, in excess of the earning capacity of the average enrollee. With the elimination of the relief factor a reduction is justified, not only on the ground of economy, but as sufficient and appropriate pay, considering the allowances of food, clothing, shelter, and medical attention. A base pay of \$15 per month would, in my judgment, be appropriate. Mandatory discharge should follow one year's service, in order to permit as many young men as possible to enroll in the Corps.

The principles that have controlled camp life and discipline seem to me, on the whole, satisfactory. There has been, on the whole, far too little rather than too much discipline. Boys have had too much leave from camps in the evenings

TABLE 1

AGE DISTRIBUTION OF 213,377 JUNIORS
SELECTED AND ACCEPTED IN THE CIVILIAN
CONSERVATION CORPS
June 15—August 31, 1935

18-28 years	Number	Per cent
Age 18.....	74,155	34.75
Age 19.....	40,289	18.89
Age 20.....	26,718	12.52
Age 21.....	20,423	9.57
Age 22.....	15,090	7.07
Age 23.....	11,707	5.49
Age 24.....	8,982	4.21
Age 25.....	5,516	2.60
Age 26.....	4,003	1.88
Age 27.....	3,792	1.78
Age 28.....	2,702	1.27
	213,377	100.00

and out-of-work hours, too many going-home privileges, too much opportunity, in brief, to leave the camp at any and all hours when the work projects did not require their presence.

While a great amount of good has undoubtedly been accomplished through the educational program, results so far do not, in my judgment, warrant its classification in the success column. An important reason for lack of success has, I think, been our inability to break away from the concept that education, so called, consists of things that people learn out of books, or in a laboratory, or from lectures, all within four walls. People measure one's education by the quality of his English, or his knowledge of languages, mathematics, science, etc. Ability to observe and to correctly weigh influences around one, and ability to use hands and head in unison and to perform useful work, is also education. The important things for a boy in the Civilian Conservation Corps to learn are sanitation, community living, physical upbuilding, citizenship, how to work with his hands, and, last but by no means least, what constitutes a fair day's work and a thorough understanding of his job.

Enrollees should be principally from that very large group of boys who have shown little susceptibility to formalized education. Nothing could be more illogical than to assume that the boy who will not, or does not, stay in established educational institutions equipped with most modern conveniences, teaching facilities, and trained teaching personnel is going to be attracted to this kind of education under the pitifully less adequate facilities of a C.C.C. camp. Our so called educational program, like some other things in C.C.C., has tended to break down through the weight of complications that have been injected into it. Ambitious educators, conservationists, and other well meaning people have "reorganized" the need for educating enrollees in everything from table

manners to metaphysics, and from table dancing to grand opera. It has been and still is in need of "educational policemen" to clear the avenues of C.C.C. training of these fancy, fast-moving intellectual vehicles and to insist on more simple pedestrian effort.

WORK PROJECTS

Discussion of this topic requires consideration of the relative desirability of kind of work in the broad conservation field because Emergency Conservation Work has been and should continue to be regarded as one of the facilities available in conservation progress. Originally designed largely as a forestry measure, the language of the March 31, 1933, act is such as to permit broad interpretations; and the actual work, as you all know, has been extended into a number of other fields. This in my judgment is as it should be, and would advocate a possible increase in kind of work and the clarification of authority to do some of the work that has so far been undertaken, rather than a narrowing of the field.

Emergency Conservation Work has been and will doubtless continue to be a national project, all states and communities sharing in its cost. The need of conservation work in different states or regions may not be measured solely by the population, since we can hardly conceive the project being applicable to urban centers. It may, however, be stated as a general rule that the need for conserving sources of soil, water, forests, wildlife, etc., and for recreational development, is greater in the non-urban regions contiguous to cities. Therefore, while we should oppose any idea that the distribution of camps should be determined by enrollment quotas—that is, all companies of origin in a state being employed in that state—we must at the same time recognize the principle expressed above; that is, the high value of accessible as against inaccessible resources.

We should continue the use of E.C.W. in the conservation of agricultural soils, conservation of water, the elimination of floods through proper drainage, and recreational development, as well as in forest and wildlife conservation. I know of no formula by which the distribution of available camps between the different classes of work could be equitably determined. The estimate method seemed to be the only practicable approach to this question. We have asked all of the work agencies now participating in E.C.W. to submit estimates of their needs for camps. The grand total is 5,068 camp years, indicating an existing present need for a Corps strength of 300,000 for a $3\frac{1}{2}$ -year period. No great emphasis can in my judgment be placed on these estimates. They can at best be considered only as what the several conservation agencies participating now see ahead. At the end of the $3\frac{1}{2}$ -year period they would in all probability see at least as much further work in need of accomplishment. Nor can the estimates be accepted without adjustment as a basis for distribution of camps. One man will see more to be done than another, and one agency may be more conservative than another in its estimates. They are, however, the only data available, and are of real value in envisioning future plans.

Table 3 shows by Corps Areas the percentage of enrollees that would come from

TABLE 3

COMPARISON OF WORK LOAD ESTIMATES, PRESENT CAMP DISTRIBUTION, AND ENROLLMENT QUOTAS, IN PERCENTAGES.

Corps area	Enrollment quota	Work load	Present camp distribution
I	6.7	2.3	6.2
II	13.8	3.9	7.2
III	11.5	4.3	10.6
IV	15.2	13.8	16.7
V	11.5	13.6	8.7
VI	12.5	7.9	10.8
VII	12.4	13.2	12.9
VIII	8.2	13.7	11.5
IX	8.2	27.3	15.4
Total	100.0	100.0	100.0

each on a population basis, the percentage of total estimated work load, and the percentage of present Corps strength. It is believed that all of the conservation agencies considered the factor of accessibility to population, mentioned above, in making their estimates of needs. (I shall explain later the method used by the Forest Service.) It may be assumed, therefore, that the figures can be accepted as showing the relative need for work in these nine major sections of the United States.

The table illustrates one of the major problems with which we have been faced in E.C.W. administration. The transportation of enrollees over long distances is of course expensive, and for short periods of enrollment its justification may be open to serious question when suitable work of lower priority may be found in their own states. It may be argued, also, that from the standpoint of the boys and their families employment in their own states is preferable. These factors should in my judgment be considered along with work priorities, so that the movement from East to West would be less than is indicated as desirable by regional work load estimates.

Regional adjustment to work needs should, however, go much further in the future than it has in the past. That will be an extremely difficult thing to bring about, because of the increasing pressure to use enrollees in their own states. As a compromise between conflicting influences, I have suggested that no Corps Area's allotment of camps should exceed by more than 50 per cent the number that it would be entitled to by the attached table, and that no Corps Area should have less than two-thirds of the percentage that it would be entitled to by its work load estimate. That would have the effect of percentage decreases in the First, Second, and Third Corps Areas and a corresponding increase in the Ninth, the remaining Areas to retain approximately their present percentages of the whole.

The above suggested distribution makes

no attempt to determine priorities in the projects of the several work agencies. It accepts the work of each as of equal urge with the others. Relative importance is a matter of personal judgment; and while I might advise some adjustment in the work load estimates, I would suggest that these being decided, each work agency should have its pro-rata share of the camps.

One of the major questions always before us in distribution of camps is the relative emphasis that should be placed on federal lands, state or other publicly-owned lands, and privately-owned lands. Most of the people charged with responsibility in camp distribution have generally leaned very strongly toward the idea that camps on federal land should come first, state lands second, minor political units third, and privately-owned lands last. During my experience in Emergency Conservation Work I have heard the argument presented times without number that, in order that the public may be assured of benefits from the project, work must be done on publicly-owned properties. Many people have in effect argued that work even of lowest priority, if on publicly-owned land, is more warranted in the public interest than work of highest priority if on privately-owned lands. Some of these advocates would remind one of the gentleman of Jerusalem ancestry who, being advised that the ship on which he was traveling was on fire, is reported not to

have been concerned because he did not own it. Thus, these advocates have not been sympathetic toward erosion control on agricultural lands because Uncle Sam does not own these lands, although, obviously, if our productive soil goes down the river, "the public" would be in the same position so far as a bare pantry is concerned.

Similarly, many foresters whose direct interest has been in the administration of federal properties are determined in the belief that for the public to get returns from E.C.W. forestry camps, they must be employed on federally-owned forest lands.

Likewise some National Park enthusiasts have been unable to see justification in the development and improvement of state or county parks, which obviously must be developed near densely populated centers if the people in those centers are in large numbers to enjoy park facilities, but would devote all federal funds to the development of National Parks, which are available only to near-by residents or to those American citizens who have the leisure and the means to travel long distances to reach them.

To the extent that I have had any influence in the allocation of camps, decisions have been based on the principle enunciated above; i. e., that conservation is a question of resource conditions and not one of land ownership. I shall continue in that principle.

TABLE 4
ADJUSTED VI-PERIOD¹ AND WORK LOAD DISTRIBUTION OF FORESTRY CAMPS BY REGIONS

Region	—Federal land—		—State land—		—Private land—		—Total—	
	Work load	VI period	Work load	VI period	Work load	VI period	Work load	VI period
R-1	10.4	3.38	.2	.41	1.4	—	12.0	3.79
R-2	4.5	2.36	.1	.307	.2	—	4.8	2.66
R-3	4.6	1.94	—	—	.4	—	5.0	1.94
R-4	6.8	3.59	—	.205	.4	.097	7.2	3.89
R-5	8.9	5.12	.1	—	1.8	.975	10.8	6.10
R-6	10.5	3.49	.1	.307	3.4	1.53	14.0	5.33
R-7	5.1	6.05	6.3	19.79	2.6	8.61	14.0	34.45
R-8	10.5	11.28	.2	1.13	5.2	7.22	15.9	19.63
R-9	8.7	13.54	3.0	8.25	4.6	.42	16.3	22.21
Total	70.0	50.75	10.0	30.40	20.0	18.85	100.0	100.00

¹ VI period is October 1, 1935, to March 31, 1936.

Which brings me to the question of distribution of forestry camps between federal, state, and private lands, and between Regions. Estimates for forestry work were submitted by our Regional Foresters after consultation with state authorities. They were divided between federal, state, and private lands. For federal lands I accepted the total, but asked the National Forest group for a formula by which to adjust between Regions. After weighing the several factors, it was decided that the need per unit of area was twice as large in Regions 1, 5, and 6 as in Regions 2, 3, and 4, and in Regions 7, 8, and 9 six times as great. The important determining factors were higher values and greater fire risk in Regions 1, 5, and 6 as compared to Regions 2, 3, and 4, and higher productive values and greater need for cultural treatment in the cut-over forests of Regions 7, 8, and 9.

This formula was also applied to state forests by Regions, giving the same weight to unit of state as to unit of federal land. For lack of any better data, a similar method was used in determining desirable distribution of camps allocated for protection of private lands. The lands in Regions 8 and 9 were allocated twice as many camps per unit of area as in Region 7, and those in the western Regions (mostly in 6, 5, and 1) four times as many.

The determining factor here was relative need for fire protection improvements. Only lands under organized protection were considered in making the allocations, which had the effect of sharply reducing the percentage that would otherwise have been allocated to the South.

The adjusted relative work load came out to approximately 70 per cent on the National Forests, 10 per cent on State Forest lands, and 20 per cent on private, the latter being for protection only. This distribution is shown by Regions and land ownership in Table 4. If all of the privately-owned land were under organized protection and use and maintenance of

improvements thereby assured, the percentage for private would, under the formula, be higher.

Consideration of E.C.W. work policy would not be complete without some examination into the nature of work being accomplished. Table 5 shows the division of time by broad classification in all camps for the period April 1 to September 30, 1935.

TABLE 5

CLASSIFICATION OF WORK COMPLETED IN ALL E.C.W. CAMPS AND WORK PLANNED IN FORESTRY CAMPS, APRIL 1 TO SEPTEMBER 30, 1935, IN PERCENTAGES

	Work completed, all camps	Work planned forestry camps
Roads and trails.....	37.15	48
Resource treatment	20.31	18
Protection	13.20	15
Misc. buildings.....	13.66	11
Recreation	11.25	6
Miscellaneous	4.43	2
Total	100.0	100.0

The item "Resource Treatment" includes forest culture, planting, revegetation, fish, game, and erosion control. The higher percentage in all camps than in the forestry group is due to inclusion of Soil Conservation Service work. The higher percentage of recreational work in the all-service figure is accounted for by Park Service camps.

Some question has been raised as to the amount of effort spent by forestry camps in the construction of roads and trails. For the period it is 48 per cent, of which 46 per cent is roads. Whether that is proper is a question to be decided by those in charge of the forests rather than by E.C.W. officials. Personally, I do question the emphasis that has been placed on this class of work on the publicly-owned properties.

Table 6 shows by a somewhat different breakdown the emphasis on different classes of work in the estimates for federal, state, and private forest work. The differences between state and federal may, I think, be accounted for through differences in degree of development and ter-

TABLE 6

PERCENTAGE OF TIME SPENT ON DIFFERENT CLASSES OF WORK IN FEDERAL, STATE, AND PRIVATE FORESTS, APRIL 1—SEPTEMBER 30, 1935

	Transportation improvements	Forest range management	Protection	Structural improvements	Recreational improvements	Other activities	Total
Federal	36	22	18	10	10	4	100
State	25	35	23	8	5	4	100
Private	45	3.5	36.5	9	1	5	100

territorial distribution, most of the state acreage being in the East and Middle West, while most of the federal is in the Far West. Since only protective work is permissible on privately-owned land, we would expect the great majority of effort there to be placed on transportation improvements and protection. These two items make up 81.5 per cent of the total. No material change can be expected in the percentages on private land in the absence of basic legislation authorizing other than protection work. While I think such legislation might be warranted, that is a matter of basic rather than E.C.W. policy, and so will not be discussed here.

In conclusion of the work projects discussion, something should be said about the nature of tasks to which C.C.C. boys should be assigned. The project was conceived as one for the employment of untrained boys. As a works relief undertaking, overhead and materials costs were to be kept at a minimum. The boys were not to do work that would otherwise be performed by local men with families to support, and emphatically not to do work on which skilled labor would ordinarily be employed. It was *one* of the unemployment relief measures.

In a natural desire to accomplish all of the work that they saw as desirable, work agencies have continuously pressed for departures from established policy.

Question of advantages in training of boys at skilled labor tasks and in use of machinery and the accomplishment of larger quantities of work through these media will continue with us. My own judgment is that established policy should continue, and should be more strictly en-

forced in the future than it has been in the past.

I have suggested limiting enrollment to the younger age groups, the selection of boys from the less successful families, and their mandatory discharge at the end of a year's service. I have suggested that the most important thing for these boys to learn is the meaning of a day's work (a day's labor). I would amplify that to a year's labor, and as in the discussion of the educational system, I would plead for simplicity and leave the training of skilled tradesmen and machinists in other hands.

ORGANIZATION FOR CONDUCT OF THE WORK

There has been a great deal of discussion on this subject, the amount possibly being out of proportion to that on the other two subjects because the organizational question is ever before us and its advantages and irritations are always with us, so that we may come to think more about the method of doing the thing than we do about the thing to be done. The general plan under which the Departments of War and Labor have been charged with certain responsibilities, and the conservation agencies other responsibilities, has necessarily resulted in some differences of opinion and some friction, because the functions of the War Department, Labor Department, and conservation agencies necessarily interlock and neither one can be conducted independently of the other. A number of men attached to the various conservation agencies have expressed themselves as believing that the functions of all three Departments could be well concentrated in the one to which they are at-

ached, and some officers of the War Department have perhaps felt that all of the Civilian Conservation Corps functions, excepting the planning of work projects, might well be conducted by that Department. In theory, at least, there may be as much argument for the one plan as the other. But out of an experience of nearly three years in the work, I am inclined to the belief that the cooperative principle, which endeavors to use constituted agencies to perform those functions for which they are best equipped, is the best, even though it admittedly entails some differences of opinion, many arguments, and some friction and some extra expense.

Certainly people who are trained by profession and experience in social problems have the same advantages in selecting personnel that will be most benefited by the project that forest and park technicians have in determining the work that shall be done, and that the War Department has in the maintenance and discipline of men in the camps. Therefore, whatever organization might be perfected for performing the functions now handled by the War Department and conservation agencies, I would leave selection of enrollees in the hands of a special agency equipped for that purpose.

There can in my judgment be no tenable arguments offered for the elimination of the War Department unless and until civilian agencies have had the opportunity to induct into the Corps and train a competent civil service organization. When and if that is accomplished, the functions of conservation agencies might possibly be extended to complete responsibility for the care and discipline of men after they are delivered at the camps. They might, of course, be further extended to enrollment of the men, including physical examinations, inoculations, and provisioning with necessary clothing, but the War Department is without question the constituted agency best equipped by training and experience to fulfill these functions, and

I would not favor extending responsibilities of conservation agencies into the field of enrollment, transportation, and outfitting.

Overhead and facilitating personnel should be employed under the federal civil service system. The advantages of this system as against what is known as the spoils or patronage system have been too clearly demonstrated in this and other countries to leave the question open to argument; and they have, for that matter, been clearly demonstrated in Emergency Conservation Work.

The structure for correlation in determination of major policies under existing law and executive orders is a Director appointed by the President and an Advisory Council made up of representatives of the major Departments interested, with actual performance of work rather clearly assigned to each of the several Departments. The theory of the present organization is that each of the Departments shall be finally responsible for that part of the job assigned to it, and the Director of the project is not expected to share in that responsibility or interfere with Departmental programs more than is necessary in order that he may redeem his responsibility as coordinator.

Suggestions have been made that in lieu of this organization there should be a Board, consisting perhaps of the Secretaries of the several Departments, which would determine major policies, and execute them through an Executive Secretary. My experience in the work does not lend encouragement to the idea that such a Board could function efficiently. Members of the Cabinet are likely to show the same intense interest in the work of their Departments and the same inability to justly weigh the work of other Departments as are their subordinates, and any Board made up of members of competitive agencies and which must decide contested questions by vote is open to possibility of more serious error than a single execu-

tive, who must make the best judgment he can after listening to the several contenders.

My conclusion is that, while a Directorship is open to possible grave errors and injustices, it is the best system that can be devised. While something more might be done in the way of clear-cut definition and responsibilities of the different agencies, it is my judgment that the present set-up is, on the whole, the best that can be devised; and while the Congress might determine more questions, such as distribution of camps, kinds of work on which they should be employed, qualifications of enrollees, some questions as to pay and care of the men, etc., we could hardly expect better decisions on the whole from this source, because state, community, and local interest would in all probability play a dominant part in many of the decisions made.

One more subject in the organizational

field needs some discussion. It is the question of responsibility for conduct of E.C.W. work on state and privately-owned lands. There has existed during the whole life of the project a strong current of belief that, since it is a "federal project," its conduct should be entirely in the hands of federal officials. I am unalterably opposed to that idea. I am firm in the belief that, with the exception of work on federally-owned land, and perhaps on small demonstration projects on other lands, all C.C.C. camps should be run by state agencies, subject to such supervision by federal officers as is necessary to insure compliance with general policies. I believe that on the whole, state agencies have demonstrated more ability to do this work than have the federal bureaus that have attempted to do it on other than federal lands, and am very definitely opposed to the further extension of federal bureaus in E.C.W. into the field of direct action affecting privately-owned property.

COMMENTS ON THE C.C.C.

By THOMAS W. ALEXANDER
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I WAS requested to comment on Mr. Morrell's paper as a representative of the eastern United States, while Dr. Jeffers is to speak on it as a representative of the West. Perhaps it is not good form for me to do so, but I propose to digress so far from the subject matter that Mr. Morrell has presented to you as to make my comments almost a new paper. I have already informed Dr. Korstian and Mr. Morrell of my intention to do this, and I hope they will excuse me, for I do feel sincerely that the angle that I wish to present to you is sufficiently important to justify such a step.

Nearly three years ago the C.C.C. movement began. Prior to its actual begin-

nings, no one was able to fully visualize its workings, its cost, and its results, and naturally there was a great deal of theorizing. Though some had misgivings, the majority of foresters felt that conservation had at last come into its own.

We now have three years behind us and no longer need to depend upon theories but have facts to guide us. That based on cost, there has been unsatisfactory accomplishment in the work end of it, is known to us all. Whenever this has been mentioned during the past three years, it has been justified on the ground that the C.C.C. was primarily a relief measure or an education measure, and that pure accomplishment in conservation

was not the only objective. The original act called itself "an act for the relief of unemployment," et cetera.

Although the relief angle is tending toward elimination, it is now proposed to set this movement up on a permanent basis. Many feel that this is already practically an accomplished fact, or take it for granted that it is sure to be done. There seems to be little opposition, but rather almost universal agreement among conservationists. This is the field into which I propose to probe in my comments.

Through the kindness of Dr. Korstian, and as a result of some letters I have written, I have here a number of comments on the C.C.C. from different individuals representing various agencies concerned with it. These letters offer many suggestions for improving the C.C.C. and are, in general, in line with some of the suggestions of Mr. Morrell. Reading them and assuming that they represent the opinions of others as well as the authors of them, it is obvious that the C.C.C. is far from perfect. Five or six eastern state forestry departments are represented, as well as government agencies. The suggestions include such things as the elimination of politics; change in age limits of enrollees; extension of the work more generally to private lands; placing the educational program directly in the hands of conservation agencies, etc. Some recommend elimination of the Army, and some say keep it in.

From Michigan comes a plea for the stopping of the insane increase in truck-trail construction; and a request for the use of local experienced men and enrollees on foot patrol. Its author desires an improvement in the morals of the supervisory and army forces, saying, "There is no excuse for the let-down which one witnesses."

The T.V.A. makes many thoughtful suggestions, and pleads urgently for at least one educated forester somewhere in their twenty-odd camps.

But these are but details. I propose

now to consider the thing as a whole. Its past costs and its past accomplishments are facts. They are no longer beliefs, theories, or hopes. We now have a basis on which to project the future. Here is its record.

The average annual cost has been about \$340,000,000 before the expansion to 500,000 men, and during the enrollment of the half-million, approximated a rate of \$500,000,000 per year. In the United States there are approximately 500,000,000 acres of forest land. Assuming that the work is primarily a forestry work, the blanket cost during normal enrollment has been 70 cents per acre per year *for every acre of timberland in the United States*, and \$1 per acre per year during increased enrollment. But, because of restrictions as to the lands on which work can be done, the camps have actually operated on about one-third of the nation's forest lands. The cost, therefore, on the acres worked upon has averaged \$2.10 per acre per year during the 300,000 enrollment, and about \$3.50 during the increased enrollment.

For purposes of comparison, I cite to you the costs of a typical eastern National Forest prior to 1933. According to their records, their total administrative cost, including all activities—road-building and maintenance, other improvements, fire protection, and overhead—was 20 cents per acre per year. Fifteen per cent of this amount went for fire protection, or slightly less than 3 cents per acre per year. That this forest was receiving reasonably satisfactory protection is evidenced by the fact that its burned area averaged about two-tenths of 1 per cent a year.

Forest work on private lands under the C.C.C. has been restricted to protection. In the same region, then, and the same state, protection under normal conditions cost approximately 3 cents, while under the C.C.C. it cost \$2.10. This, mind you, is not an isolated instance. It is the average universal blanket cost on all lands

being worked upon, and worse, it is not giving protection.

In the face of this amazing cost, there are many foresters who contend that the work should still further be restricted and confined only to federally and state-owned lands. This proposal is automatically ruled out, because, unless the Corps is radically contracted, the work is simply not available. The majority of *private* forest landowners whom I know are not requesting the extension and continuance of work on their lands. Their first desire is that the C.C.C. be discontinued entirely. They properly feel, however, that if, in spite of its obvious waste and inefficiency, it is to be continued permanently, they are entitled to some benefits from this expenditure, since they, through taxation, must share in the cost; whereas federal and state-owned lands to date bear virtually none of the expense.

Fire protection costs in the various regions have been fairly well stabilized in the past thirty years. In the Southeast, for instance, we feel that a blanket 3 cents is reasonably adequate. In one organized county in North Carolina the average expenditure for the past ten years has been about $\frac{1}{3}$ cent per acre per year. It did not get full protection, but with ten times as much it could have, and that would be 3 cents. To be on the safe side, suppose we double it and allow 6 cents. By what possible reasoning, by what possible propaganda, or by what possible theorizing can we justify \$2.10? And what forester or what conservationist is going to be willing to face his timber raised on 120-year rotation at a cost of \$2.10 per acre per year? We must remember that in addition to being propagandists and protectionists, we studied forest economics in college and should practice it as a part of our profession.

This, in my opinion, is one of the permanent and lasting injuries that is being done to forestry and foresters. We are utterly forgetting the item of cost. We

are unbalancing our practice of forestry by eliminating economics, and economics is one of the cornerstones of forestry.

On the 6-cent basis, the annual fund available for blanket nation-wide protection would be \$30,000,000, which on the present rate of cost per camp would support 150 C.C.C. camps, an average of three per state, *including federally-owned lands*. (Please note that I refer only to protection funds. I assume that funds for the other activities would be in addition.) Would those who advocate contraction but continuance of C.C.C. be willing to spend this limited but apparently adequate protection fund on C.C.C., or on some other form of protective system?

Coming to the accomplishments under this present expenditure: The Director's report for two years to March 1, 1935, stated that the value of the work accomplished through 21 months was estimated at \$335,000,000. I have taken his report of the work done on the main activities and have applied to it standard unit costs for similar work, as best I remembered them, as established by the Forest Service years before this thing began. My own estimate of value of work done for that 21-month period is \$135,000,000, or a little more than \$70,000,000 in one year. This indicates somewhat more than one-fifth efficiency. I have tried to be fair in my unit costs used, but am anxious to have them reviewed by qualified foresters in order to be corrected if my figures are wrong. And in my estimate, I made no allowance for useless or wasted work, but assumed that all work done was useful.

Of course, excuses are offered by those who would defend C.C.C. The "social problem" argument is the principal one advanced; along with it, educational needs of the boys are cited; I would call your attention to the fact that the name of this movement is *Emergency Conservation Work*. Remember that conservation in the layman's mind means forestry, and remember that over the years to come

forestry must bear this cost. Finally, remember that we are considering this thing as a permanent institution; not as an emergency activity; not as a temporary agency of the depression.

As to the social problem, that, like education, hardly lends itself to mathematical analysis. The value of this movement from these angles is largely a matter of personal opinion. Other agencies are organized for the purpose of handling them. During the depression, those agencies were overwhelmed, and the forestry agencies were made the goat. In my own opinion, we poor foresters are now delving into a field in which we do not belong and for which we are not trained, with a consequent inevitable loss in our own field. We should "stick to our knitting." We have plenty to do.

In human relations, special benefit to the group automatically brings on injury to some other. Here is what I mean: I live far back in the mountains. I have neighbors who live as I do. Many of them are living in the houses that were occupied by their parents and grandparents. They were born to woods work, and it is amazing what they can do with an axe or a saw. I employ some of them at odd times, paying them \$1 a day, and do not furnish them board, clothes, and recreation, because I can not afford it. We live at the heart of a virgin forest. At my front gate is a C.C.C. camp. It was occupied for a time with enrollees from New York City. After six weeks' work this company was moved with great expense to Utah, and was replaced by Alabamians, who after two weeks' "conditioning" took up the work projects. When snappy fall weather came, they were moved out, and the camp was vacant. These camp boys have pecked away on forest jobs, actually working less than three months during six months' occupancy, while many of my neighbors are without employment. Yet they could have done the work these camp boys have done at one-tenth the cost.

Now, we speak of sustained annual yield for stabilized local communities! Our current propaganda for forestry revolves primarily about this picture of providing continuous forest work for the residents of the forest communities. Yet I tell you seriously that neighbors of mine are actually moving out of their homes, going elsewhere, trying to find jobs, while the forest jobs they should be doing are being done by outsiders. Yes, seven and one-half per cent of the workers in these camps are gathered from my neighbors and their like. But ninety-two and one-half per cent are outsiders, and my neighbors need the work. It is strange to me that this profession of ours that has so suddenly gone "social minded," seems not to see the needs of these people right within their forests, who have the foundations for forest work and should be the ones educated to forestry.

Mr. Morrell, in discussing C.C.C. set-up, says: "the boys were not to do work that would otherwise be performed by local people with families to support." That statement of policy would be funny if it were not so sadly ridiculous. Why, every job to be done there would be done by local men with families to support if the C.C.C. didn't do them. But perhaps the statement means that we will create new and uncommon or unessential jobs for the boys to do! Have you ever heard of the term boondoggling?

It is generally agreed, as Mr. Morrell states, that "the relief factor would presumably be eliminated in any plan for a permanent C.C.C." If this be the case, the only remaining excuse is education.

Now, as to your education, these neighbors of mine have boys. Many of them have never spent the night in a city, because they have never had the opportunity. The greatest desire of their lives is to see all the marvels of civilization about which they have heard. Since we foresters are going into the educational field, let's make it adequate. I propose that we petition

for the creation of a corps to give country boys an opportunity to live for a year in the city, under our supervision, to wear white collars, read by electricity, cook by gas, warm by steam heat, ride subways, and incidentally, to take the jobs from messenger boys, clerks, bookkeepers, and other city dwellers. Is this far-fetched? They can do it better than the city boys can come and take their jobs, because they are more adaptable.

Without going into details, we all know that the educational program has been a failure. Permit me to offer a bit of advice. You have got to catch boys earlier than 17 and keep them longer than one year in order to give them education of lasting value. There is resentment in the section where I live at this bringing in of outsiders to take the jobs that belong to the local people. Whether this is repeated elsewhere I do not know, but I feel sure it must be. Yet I distinctly remember, during my employment in the Forest Service a dozen years ago, that practical and logical principle that was followed, of favoring the local man and the little man in timber sales, employment, and all phases of forest administration. That was a sane principle.

In the southern Appalachians the condition of these local woodsmen is particularly distressing. On the Appalachian plateau the federal government now has virtually monopolistic control of virgin timberlands.

Finally, let me point out to you the inestimable damage that this thing is doing to our young foresters. We are taking juniors from college, before their education is completed, and starting them in on the payroll at \$150 to \$200 a month. We are giving them responsibilities beyond their capacity to carry. We are imparting to them an exaggerated sense of their own importance, and of the future of the calling. Our only justification for this is that the forestry profession is one hundred per cent employed—as if this were sufficient

to offset taking from these young idealists the lasting benefits of a slow and partially achieved education, that, on small beginnings during the adolescent period of their career, ultimately carries them to a sound place as a true forester. There is no short cut to true maturity, and the young professionals are now trying to “do,” while they should be “seeing” and observing.

Summarizing, there are six fundamentally illogical features of the C.C.C. that makes it impossible to ever bring it to even a fair condition of efficiency and economy. They are:

(1) We are attempting to do work with labor that is not trained by environment to do that work.

(2) We are attempting to supervise the work with organizations strained beyond their capacity to properly supervise it, and which cannot be adequately expanded because personnel of the proper education is not available.

(3) We are attempting to do it in cooperation with an agency that is not fundamentally sympathetic toward the aim in view.

(4) We are handicapped by restrictions as to hours of work that do not apply to outdoor labor, because of weather and seasonal conditions.

(5) We are handicapped by political influences that prevent unbiased selection of personnel and work projects.

(6) We are forced to work our labor in units of such size as are unsuited to the jobs we have to do.

Under these conditions, the agencies concerned in it cannot be held responsible for the costs and results, but the public cannot be clearly shown these things, and there are citizens who are beginning to wonder.

Summarizing the harm to us, we are:

(1) Ignoring forest economics, a vital part of our profession, and teaching our young foresters to do so. (Public for-

try should be a precept and example to (private forestry.)

(2) Violating our own principle of stabilizing the local communities by forestry work.

(3) Harming our own professional personnel by too rapid advancement and too great responsibilities.

(4) Diverting our own energies into channels reserved for others, at loss to our own fields.

The educational program is almost universally admitted to be a failure; the chief factor would presumably be eliminated in a permanent plan; and so there remains only the element of productive work.

I personally believe that if the harm done by the C.C.C. were totaled up, including such items as cleared rights of way for both useful and useless truck trails, fire breaks, and telephone lines, plus the washing of mud into streams, with the resulting destruction of fish, plus the animosity created among natives, plus the injury to our own profession, the losses from forestry from C.C.C. would balance against the gains, and the net total would approximate zero.

If, however, because of some supposed social benefit C.C.C. cannot be discontinued, I would recommend that it be turned over to the War Department, State Highway Departments, Soil Conservation Service, and other agencies that can use them at real value—without such grave harm to themselves.

One very general comment is that it is so hard to get the necessary appropriations for forestry that this is to be preferred rather than face the fight of wringing out the moneys needed through regular appropriations. One of our most universally respected men, when faced with a difficult question, always asked himself, when trying to make his decision, "Is it right, or is it simply expedient?" If our cause be just and sound, and needed, our leaders should be forceful enough to secure the needed moneys. Otherwise, we need new leaders.

Forestry in the United States got on its feet about thirty years ago. It was led by practical men. The United States Forest Service has a past record of efficiency that is a model to other government departments. Its bookkeeping and accounting systems are the best to be had. Its record for twenty-five or thirty years was one of economy and freedom from politics and it reflected credit on the entire conservation movement. Its leaders have followed the principle of "value given for moneys spent." Conservation has been one of the cleanest of American governmental activities. It is a record to be proud of.

If, now, because of gold to spend and the sense of power that comes with such spending, the leaders of forestry abandon these principles, if they openly advocate the permanence of the C.C.C., or through silence they give assent to it, they will write during this era the blackest page in the history of forestry.

FURTHER COMMENTS ON THE C.C.C.

By D. S. JEFFERS
Idaho School of Forestry

I

MR. MORRELL proposes to look to the future; and I want to keep my eye on the future as I think of the possibilities of the C.C.C. Thus far, it has partaken of the philosophy, very largely, of a war measure. That is, we have poured money, man power, and resources into camps in an almost reckless effort to stop unemployment. If we are to consider the C.C.C. first, as Mr. Morrell suggested, as a social program, if it is to be one of the great youth movements of this generation and this century, then by all means, gentlemen, foresters in the Forest Service and out of the Forest Service, let us view it as we would any other national social effort.

As suggested by Mr. Alexander, we are not trained as leaders in youth movements, and although the President of our Society would have us train foresters of the future in the social problems of life, none of us, thus far, have been trained as leaders in social welfare work. Thus if those around the council table of the C.C.C. think of it primarily as a social program, and as a youth movement, we must think of it much as we do of the Boy Scouts, wherein we plan a job but leave the organization to others.

Ours is another problem. We are trained to grow trees, and harvest trees, and manage lands, and to economically place upon the markets of our country and the world products manufactured from timber, suitable for human use and consumption. We are not, let me say emphatically, leaders in youth movements, nor trained in social work. If the conservation of natural resources is to have equal consideration with the social value

to be derived from the C.C.C., then I picture a place for foresters, yet only so far as we select the work to be done upon the basis of relative priority, viewed nationally, and our ability to determine when that work has been done efficiently, effectively, and above everything else economically, considering that we are spending *tax dollars* in the conduct of the work of the C.C.C.

I am thinking of another great social effort of the United States that I will point out in a moment, as I view the social possibilities of the C.C.C. When this C.C.C. youth goes back to his community after one year in the camp, which may be the limit in the future, will he be such a better citizen that he will be an influence in the community to change it for the better? It is understood that the C.C.C. boys in the future should come out of those environments where the opportunities for advancement, for citizenship training, for wholesome view of life are at the minimum; and we hope in one year to give that boy such an altered view of his social responsibilities as a citizen that he will go back and in some way live differently. The United States in a measure at least failed, if I am correctly informed, in its efforts to change the points of view of the sons and daughters of the Indian chiefs as they trained them and sent them back to the reservations. I wonder if it is inherently possible to take anyone, red, black, or brown, or Caucasian, and in one year change his point of view at this age of life.

II

What Mr. Morrell has said with reference to discipline is of interest. Undoubtedly everyone in this audience believes

discipline of a certain sort, and every individual here has had to subject himself to certain disciplines, quite often of his own making. At the same time, probably everyone here will be in accord with the statement that, whenever discipline is the exercise of the will of those in constituted authority, we are inclined to be restless and ill at ease. Discipline then becomes too much regimentation, and at once we fall back upon the old slogans of liberty and the Constitution. In that connection one interesting comment of a collaborator is pertinent. "Now, I know full well that certain C.C.C. projects have been failures. In some cases time has been wasted on unprofitable work. Discipline has been lax, morals rotten, and the boys have gotten drunk and committed all sorts of misdemeanors and even crimes. Nevertheless, the fault is not with the boys, nor with the C.C.C. program. The blame rests squarely upon the men in charge. There have been cases where projects have been let up and manned with incompetent political appointees, and for no other reason than the selfish interest of some narrow community or group. The cure for such evils rests entirely with an aroused public conscience that will brook no political or selfish control of the C.C.C., and that will stand for nothing short of the highest standards of common sense and efficiency in its management.

"It has been absolutely demonstrated that, in the proper hands, the C.C.C. can be the greatest mass character-building organization for young men that this country has ever known."

Discipline of the right sort must be had in a camp, but I would protest against that type of discipline commemorated in the "Charge of the Light Brigade"—"Theirs not to reason why." Discipline which is sympathetic, a discipline which grows out of a situation appreciated by those disciplined, is the ideal towards which the E.C.W. program should be directed. It is not our problem; if the dis-

cipline of the C.C.C. camps can be handled properly by the Army, well and good, so far as we are concerned. That is not part and parcel of the program of the conservation of natural resources.

I welcome Mr. Morrell's general and sincere criticism of the educational system. Fortunately, it is not static. We are endeavoring to change it, but I think it would be impossible to change the educational system as he conceives it and to transfer it into the C.C.C. camps, and make it function effectively for the youths gathered there and kept there for only one year of time. Furthermore, I think it would be impossible for us to gather together the facilitating personnel that could effectively handle the program suggested by Mr. Morrell. May I quote one or two statements of others? "The best educational program, it seems, would be purely on a vocational basis, in so far as it is possible that the educational program ties in with the day's work. It will not always be made to do that, but a good illustration is found in the construction of the bridge built at Avery, Idaho, where the enrollees left that task skilled in a trade of which they were before utterly ignorant."

"I have seen 27 boys at a time using trowels in laying up a parapet wall of rough stone ashlar and doing a job that would do credit to any group of stone workers in the country. I have seen recurved cement spillways and aprons of the most complicated and advanced design poured by C.C.C. laborers, and behind forms which they themselves set up under the guidance of competent foremen. I say it is not always possible to tie in the day's work with educational programs, but, if it can be done, that is the ideal set-up."

One person has suggested that probably much more "could be done in the way of education, vocational training, maintaining personnel records, and placing the men at the end of enrollment periods. If

the major reason for maintaining the C.C.C. is a social one, it would seem logical to take pains in training these men for jobs outside of the C.C.C. and placing those men who are qualified in such jobs."

III

When we come to the effectiveness of the C.C.C. viewed from the standpoint of money spent, if we ask how much the daily cost per boy is we are given a range all the way from \$6 to \$8 plus. We are spending *six tax dollars* per day per man, if I am correctly informed. Published figures of one of the War Department critics of the whole system are to the effect that it is \$8 plus, per day per man. If it is six, or five, or even four *tax dollars* per day per man, we are not getting our money's worth, and we shall not get our money's worth.

The entire machinery of the C.C.C. camp reminds one of a glorified Boy Scout effort. It seems that the only effective relationship that can exist between the Forest Service, the National Park Service, and the state Forest Services would be the attitude taken toward the Boy Scout movement in a community: to endeavor to aid in any reasonable way; but when it comes to our program, our problem of converting lands or using lands to answer the national responsibility which we have, we must rate the C.C.C. as a relatively mediocre protective agency.

IV

The following observation, which is at variance with the position that I hold in general, ties in nevertheless quite definitely with my first observation, with reference to war and the C.C.C. program. Is it not possible, in this approach of the foresters to the C.C.C., that we are placing entirely too much emphasis upon the individual? I would not in the least detract from the social value of our efforts.

Not at all. But we are not placing enough emphasis upon the task, which is ours—which is specifically and definitely ours—which we have taken to ourselves, and which the public readily grants is ours. We might say with Sir Herbert Lawrence that "the question of the sanctity of human life, which is one that appeals to every human being, has sometimes been exaggerated to the disadvantage of certain other facts of public life."¹ We are concerned with the boy, but it is our duty and our definite responsibility to be concerned with the resources.

A story may illustrate what I have in mind. Recently, Jim Langworthy retired from the Forest Service in Colorado. He was reared on the range. Assigned as forest ranger to one of the districts of Colorado, he arrived at headquarters which consisted of a store, a blacksmith shop, and a school house, and I believe one residence where they served some meals. When Jim arrived, a revival meeting was in progress at the school house. Everybody had gone to the meeting, and finally, when Jim could not find anything else to do, he joined the group in the school house, where all the seats were taken except down in front. Jim draped himself around one of the crude benches and set himself to enjoy the evening. The minister was waxing warm as he discussed the Prodigal Son and the joy of the father on his return. You know the story. At the climax of the discussion, he sighted Jim, down in the front seat, and pointing to him, said, "Young man, what would you have done in that case?" Jim, always equal to any occasion, in his drawling voice replied, "I'd have killed the boy and raised the calf." I am not advocating that we kill the boys; but I am very vitally concerned with the calf.

V

With reference to the work projects and the distribution of the camps, I think we

¹Time, January 20, 1936.

of the West have found that the 200-man camp is too inflexible. Our problem, of course, is not greatly different from that in the East, but the C.C.C. has been a good agency in many respects for fire protection and for handling small projects under such a category here and there. A camp of 60 or 70 men, placed under a competent man in the locality where there is a specific job they could do, with particular reference to fire protection, is judged to be the best set-up for the conditions that prevail west of the 100th meridian.

Another thing that impressed us in the West was the wide divergence of standards of work in various camps. The standard is between the Forest Service camps, the State camps, and the National Park camps has tended to raise a great deal of criticism with reference to the effectiveness of the C.C.C. Two quotations, one originating in the Central Rocky Mountain Region and one in the Northwest, will set forth pretty well the idea: "We equipped our camps with steam shovels, elevating graders, dump trucks, air drills, compressors, caterpillar tractors, and other heavy construction machinery. We drove those camps 24 hours a day during summer weather, using three 8-hour shifts at times, and during hot waves we used four 6-hour shifts. For weeks at a time we got 22½ hours' actual machine operation out of the possible 24 hours. Don't tell me that the C.C.C. boys can't learn, or that they won't work. They can and they will, under proper leadership." "In contrast with this seemingly ample supply of machinery might be compared camps where there was not even a caterpillar or a dump truck, and all the work had to be done by hand." "Quite frequently the C.C.C. enrollees were given a driving test which was not too strict, and then they were placed in charge of a high-powered truck and charged with the lives of 20 men. Dark nights or clear nights, rain or dry pavements, we let them drive just the

same. They received no more pay than did the individual who had not mastered his job and was careful. The public will not long overlook such matters of inefficiency and carelessness."

VI

The question of the location of the camps on federally-owned land, state-owned land, and private lands is certainly one for discussion. It is probably a matter of personal opinion. I doubt if it will be within the limit of possibilities here to lay down a policy which would receive the majority approval, because we approach a thing of that sort from so many different angles. Mr. Morrell is definitely committed to the principle that "conservation is a question of resource condition and not one of land ownership." Upon such a basis it is imperative that society be assured, beyond any question of doubt, that money spent protecting or restoring a resource on private land shall be returned to the public in a land management practice which perpetuates the resources contained therein. It amounts to the acknowledgment of public stewardship by the private land-owner.

Resource condition as a basis for conservation efforts of the C.C.C. might even suggest the planting of fish in the Bronx River. There economic costs loom large. The accessibility of a resource as a measure of its inclusion in the program becomes, also, a problem of economics first and of broad social need second; i. e., what does it cost, and then, can society carry the obligation involved?

Fortunately there is a growing sentiment, as was stated by Mr. Goodman so splendidly, whereby all citizens are going to cooperate and look toward a common problem in the handling of land; but thus far the majority of private owners are not considering themselves responsible to the public for the stewardship of their lands. The public will not receive proportionate benefits, necessarily, for C.C.C. work done

on private land until and unless we do get that cooperative effort which Mr. Goodman suggested.

VII

In conclusion:

1. If the C.C.C. is viewed as a youth movement, a great social readjustment program, foresters and forestry organizations must view it as any other effort looking toward the betterment of general social conditions. If the E.C.W. plan is to be a joint conservation effort to martial our national resources, human and material, for the greatest good of all, then economic values will have proper consideration.

2. Although interested in the discipline in the camps and the education of the enrollees, as any layman should be, our responsibility as foresters is to center our attention upon that sector of the program dealing with material resources.

3. The effectiveness of the end results as measured in the projects completed, the

resources truly conserved, and the public responsibility answered is seriously questioned by many—a fact we must recognize.

4. Although I would not minimize in the least the importance of the individual enrollee, it is imperative that the foresters keep before them their chief task of the conservation of natural resources.

5. The Civilian Conservation Corps may be an effective agency in the perfection of a protection system and in actual fire suppression. The large 200-man camps are too inflexible for the most effective work and the best esprit de corps.

6. The evident differences in the thought of individuals regarding the distribution of camps and projects may be fused in the spirit of individual and collective stewardship of all land and the resources therein and thereon, expressed in cooperation in conservation.

At this point Prof. P. A. Herbert read the following statement on behalf of the C.C.C. Committee of the Society:

STATEMENT SUPPLEMENTARY TO THE 1935 REPORT OF THE C.C.C. COMMITTEE OF THE SOCIETY

AT THE time that your committee presented its report at the annual meeting of the Society in Washington last January, brief questionnaires were being sent to junior members of the Society of American Foresters whose mailing address showed that they were employed by and stationed at Civilian Conservation Corps camps. Because of the pressure of work in the Society's office in Washington, these names and addresses were not fully compiled until sometime in the spring; and so the answers obtained from this questionnaire were received between March and May, 1935. Seventy-three questionnaires were mailed out and thirty-four replies received.

The first question asked was: "Are young college-trained men in general more

desirable than old practical men as foremen in C.C.C. camps?" Twenty-five replied that the young college-trained man was generally more desirable, four said "no," six saw no difference between the two classes, and three suggested that each camp should have a few older woodsmen.

Question 2 was in reference to the dual control of the Civilian Conservation Corps. Twenty-two of the men were opposed to such dual control and desired that the camps be controlled by the E.C.W. organization, nine were in favor of dual control, and several suggested that armed men be retained where giving satisfactory service, but placed under the E.C.W. organization.

The third question asked read: "Are politically sponsored foremen in your

camp as efficient as other foremen?" Twenty-four replied "no," two said they were, and four replied that they were just as good.

The fourth question read: "Is the work in your camp being adversely affected by politics?" Only four replies said the work was very much affected by politics, fifteen claimed that it was somewhat affected, and twelve said it did not hamper the work.

The last question asked the recipients of the questionnaire: "Do you approve in general of the New Deal projects involving conservation, such as the C.C.C., the A.A.A., the N.I.R.A., the shelterbelt, subsistence homesteads, and acquisition policy?" Without exception, all the replies were in favor of these administration conservation projects in general, although nine were opposed to the shelterbelt and four to the Lumber Code.

DISCUSSION

Mr. Morrell: My paper presupposed a Civilian Conservation Corps; it did not enter upon the question whether there should be one. On that point I want to suggest one or two further thoughts. It is quite true that you cannot take boys from the East Side of New York and send them back after a year to revolutionize the East Side. That is not a reason for doing nothing for these boys. I did not hear a substitute offered. There is plenty to criticize—if any of you know more reasons than I do, I would like to have you tell them. Professor Herbert spoke of the necessity to get boys out of misery and distress, the terrific psychological effect of unemployment. The boys of whom Colonel Alexander spoke, his neighbors, are not as badly off as are the boys who tramp the streets, and travel on the rods by the thousands and thousands, with nothing to eat, and no home, and no future. You can't wipe out a logical means of help unless you put something in its place.

I have no patience with the idea that we foresters should try to grow trees and keep clear of social considerations. What are we growing trees for? They are for social benefits. We must participate, and exercise leadership. If we don't, somebody else is going to do it better.

These four million boys in the seventeen or eighteen year age group are not going to have useful employment in the cities. A

permanent situation must be met, somehow. I am not so greatly interested in the cost of the work. I will agree with Tom Alexander's figures. I grew up on a farm in eastern Nebraska. Where days came that we could do nothing better, we used to dig rocks out of the field, to improve by a little the condition of that farm property. It would not have paid to hire labor for it, but we had to eat, and to feed the help, busy or idle. It was not a question of how much the work was worth—two dollars a day, or fifty cents. The question was how to use otherwise waste energy on something constructive. If we don't assume a social responsibility to find work in the forests for the unemployed city boy, who is going to do it? Or are you going to leave it undone, and kill the boy and grow the calf? I think it amounts to that.

Chairman Korstian: We now have the subject squarely before us. We are called on to weigh the social benefits against the economic costs. Almost without exception, people who are not foresters consider the C.C.C. one of the best of the New Deal activities. It matters not whether they are Republicans or Democrats, Northerners or Southerners. They look at it from the standpoint of the social benefits and the desirable work accomplished. They have not, in most cases,

weighed the question of relative costs. Now is the time for dispassionate discussion of this subject.

Mr. J. O. Hazard: The discussion, so far, has seemed to me to throw a great big blur over the whole matter. In Tennessee, before the C.C.C. was started we had a \$7,000 forestry appropriation. During the first two years of the C.C.C. we put fire control equipment on 3,500,000 acres of forest land in Tennessee, that will function. We could not have done it without the C.C.C.

When we started we had all of our superintendents and half of our foremen foresters, and the rest engineers. Political considerations have displaced most of the foresters who were not previously in the state, but before that we had got a pretty good plan under way. I think our foremen average very well now, in spite of their political status. As I said, 3,500,000 acres of private land are now equipped for fire protection. One dollar's worth of stumpage grown on tax-paying land is just as valuable in industry as one dollar's worth grown on public land. Furthermore, it is nearer to the industry. I am very strong for putting fire protection on the remaining 7,000,000 acres in Tennessee that need it. With fire control, all our lands, public or private, will be producing their dollar's worth of stumpage per acre.

Recently the tendency has been to take the camps off of private lands. As against practically 40 per cent of the camps on private lands when the program started, there are now something like 20 per cent. Why concentrate on federal work when the state agencies can get such results as we have been getting in Tennessee, and such support from the public?

I think the most crying need for us is to get our private lands protected, and I hope that something can be done to keep our program supported. I am going to be in a hot spot when I go back to the

legislature the next time, because of the withdrawal of the camps under my direction and the greater weight given the federal worker.

I have never favored the two hundred man camp, nor do I believe in Army participation.

What I see as a future for us to work towards, as something to replace the C.C.C., is a lay-out of a hundred camps in Tennessee, each located on a small piece of state-owned land. Each camp would care for perhaps a quarter of a million acres, with boys selected from the areas. Their work would be chiefly fire protection and putting in permanent stream improvements. Give me those boys for a year, and let me inculcate into them the moral ideals that you have in your Forest Service rangers. I don't want big camps, and I don't want one man more than is needed to provide fire protection and do the things that will build up the natural wealth of the lands unsuited to tillage. Let us keep out of the rest of it. Let us produce some wildlife. Let these boys go back to their homes and plant on their father's farm some trees they have helped to grow; let them take back a pair of quail or turkeys, or some fish. In ten years we would have a college campus in the thoughts of those boys, spread all over Tennessee, and they would sell the state on conservation so that nothing could shake it. I am for the C.C.C. brought down to earth, with every boy working in his own neighborhood, thinking he is doing a worth-while job, under a man with ideals.

Dean Hugo Winkenwerder: Originally the C.C.C. camps were established as a relief measure. The public looks upon the camps as a relief measure that is getting somewhere. Compared with the W.P.A. projects, which were also relief measures, the C.C.C. stands close up to heaven.

We have an opportunity here to develop

something really worth while as a permanent institution. We should analyze these various criticisms and try and overcome the defects. I go back to the young fellows who have been taken out from the cities. It might be well to make them a little younger; it might be well to give them a chance to stay in the camps longer; but these questions can be studied out. I think the criticisms had a good deal of merit. If we study the questions thoroughly and try to overcome the difficulties, the C.C.C. is going to be one of the best things in the country, both from a social standpoint and from the standpoint of help in the development of the forests.

Mr. H. W. Shawhan: The education of the boys has been discussed. I agree that it is entirely inadequate. Has the education of the American public along conservation lines been properly evaluated in the equation? The C.C.C. was like a war measure, and in time of war, economical, all bets are off. What would these boys have been doing if they had not been in the C.C.C. camps? Would the conservation officials, state and federal, who have handled the C.C.C., if they had to do over again, refuse the opportunity to obtain the benefits which have been won, and if it is made permanent is there any conservation official intrusted with the C.C.C. who will shrink from the responsibility?

Mr. W. N. Oettmeir: Mr. Alexander brought out that the C.C.C. camps are operating at an expense of \$2.10 per acre. We, as foresters, have been trained to figure our operations over long periods of time. Applying Mr. Alexander's figure to the special project that I have in mind, the fire-breaks constructed, truck trails, and improvements put on the land will be fully beneficial, I should say, over a period of one hundred years. Maintenance cost on this construction will amount to so small an amount that the annual cost, dis-

tributed, will come only to around 10 or 12 cents an acre, not \$2.10 an acre. The government is putting in a system of fire protection that could not possibly be achieved otherwise in so short a time. As for taking labor away from the local people, in our own timber protective organization today we are employing, ourselves, more men than we did before the C.C.C. was there. Furthermore, we attempt to get local men who are worthy of work into either our own C.C.C. camp or some other camp adjoining us. I think the E.C.W. is a worthwhile organization, and possibly one of the best New Deal programs.

Mr. Harris A. Reynolds: I am not employed in the C.C.C., I am not in state service, and I am not in the federal service. I am the treasurer of a taxpayers' association. The Massachusetts Forest and Park Association has been boosting C.C.C. ever since it started, but last year we got a little shaky. We began to find people asking: "How much is this costing?" We decided to form a committee to make a thorough investigation of the C.C.C. in Massachusetts. We selected about fifteen men, made up of lumbermen, wood manufacturers, one banker I think, and several foresters. We had them visit the camps and then get together and compare notes.

I am going to give you the dark side of the picture first. To begin with, we made up our minds that political interference was a bad thing in Massachusetts. When we found that a foreman who had been rated, for a year or more, as the poorest foreman in camp had been advanced to camp superintendent, we made up our minds that the new camp was going to be inefficient. When we found a dam which, on the basis of man-days, cost \$50,000, but would not hold any water, and another \$50,000 was put in, making the dam twice the necessary width, we made up our minds there must be some inefficiency in the planning of it. While

that was the worst case, there were dozens of others that measured up pretty near to it. During working hours we found from three to five men in the recreation halls, and we asked a few questions and found that the Army was keeping 22 men in those camps to take care of them. With a 200-man camp our loggers in the North would have not more than six to eight men. We felt that there was inefficiency when we tried to figure the cost, though if any man in existence knows the cost, I would like to meet him—we could not find him. But we found that the materials and the dual overhead explained about two-thirds of the total cost. As a layman, and I am speaking as a layman and not as a forester, we just could not "savvy" why we had to have two sets of men supervising these boys; though I know it was absolutely necessary in the beginning if we were going to start the work quickly.

Then we went a little further. In Massachusetts we have a lot of idle land. There are some 3 million acres of forest land, of which 11 million is assessed at about \$5 an acre; and we have acquired 160,000 acres. On one state forest of about 10,000 acres they had had two 200-man camps for two and one-half years, or 1,000 man-years. At \$5 per day per man, \$180 an acre had been spent on lands for which we paid only about \$4.20 an acre. Can any of you foresters show us how we can grow timber on that basis?

All around our state forests the same type of land, which we have not yet been able to acquire, needed fire protection. Our association has been trying vainly to get those camps to spread out the protection improvements, give us water holes, and cut through some roads. We are told: "Oh no. You cannot put men on private lands. That is against the regulations." I had heard they were being used on private lands elsewhere, but that was the story we got. Then, with those 400 men in there the second year, "manicuring" the first year's work, a forest fire started just

outside. They rushed all the boys out but not one knew how to fight forest fire and they stood along in the road, and the fire got going in the pitch pine. Had they spent a little time cutting roads through, they could have reached the fire quickly and put it out. There is no question about that.

It seems to us that we should all figure to have the men put under civil service with an examination for all the men now employed in the camps to see whether they are any good and should stay there. We believe, too, there should be more planning. I entered no camp in which they could lay down a plan and say: "There is our outline of what we are going to do. When that is done, this camp can move out." The boys are not to blame for the lack of planning or gray matter. I know that this is probably a 60 per cent public welfare and 40 per cent conservation affair. I always told that to the audiences I talked to; but after making the surveys I was convinced that if any one of us had had 25 per cent of the money spent, to do the work under private contract, he would have cleared a lot of money.

Now, I want to come back to the bright side. In making our report—and the fellows who made it were taxpayers—after setting forth to the directors of the association all our criticisms and urging that correction of the inefficiencies be made, we turned around and said: "Put in a petition for the extension of the State Forest by 500,000 acres to keep the C.C.C. going. We believe it is head and shoulders above anything else the public has attempted for the relief of unemployment." Five hundred thousand acres is one-tenth of the state, and more than three times what we have already acquired. I believe it is up to us, as foresters, not to hide behind the smoke screen of public welfare, but to ferret out the things that ought to be corrected and see that they are corrected.

we are to save our reputation as foresters.

Mr. C. S. Cowan: Politics in the C.C.C. comes first of all from the states—residents, congressmen, or local office holders. We should not primarily blame the C.C.C. We have got to educate our people at home.

With regard to educational activities, it seems to me that we might do much more than we have hitherto along such lines as having foremen and superintendents explain the engineering problems that are encountered in bridge construction, culvert building, drainage, and so on—how the stresses and load factors are worked out; why certain types of girders are used, and why trusses are used.

In the past I have been critical of many minor details in C.C.C. policy and execution; but these are superficial matters. I was glad to hear what Mr. Morrell said about the value of camps on private lands. It seems to me absurd to place 75 per cent of the camps on public lands, where are 25 per cent of the land

values. The private lands as a rule have greater productive power and will more quickly make dollar returns to the public. I would like to see foresters change their manner of thinking; forget about sustained yield and think in terms of sustained employment, which is exactly what sustained yield means.

The place of the Army in the C.C.C. set-up has always been a sore point. I think the Army function should not extend outside the camps. In the state of Washington we have had fire crews led by Army officers in high boots and spurs. The Army is useful in enforcing disciplinary rules in the camps. I am inclined to believe that our own superintendents and foremen are mostly used to dealing with mature men and are not adept in disciplining camps of youths.

At this point Professor Chapman read the following report from the Committee on Employment of Foresters in Public and Private Forestry, relating to the Civilian Conservation Corps:

REPORT ON THE CIVILIAN CONSERVATION CORPS

THE report is presented in the following form:

- C.C.C. political appointments.
- Relative efficiency of National Park versus National Forest camps.
- Advisability of discontinuing the dual control of C.C.C. camps by eliminating the U. S. Army.
- Summary of the Report of the Committee.

C.C.C. POLITICAL APPOINTMENTS

The C.C.C. camps fall in a number of groups, each of which is under a separate federal jurisdiction as to work performed. Table 1 shows these groups as of Jan. 2, 1936.

Coordinating agencies are, for supplies, health service, and camp discipline, the U. S. Army, and for employment or enrollment and general regulations, the U. S. Department of Labor, under Robert Fechner.

The facts regarding the political status and efficiency of these camps cannot be obtained from the federal agencies, as their employees are restrained from expressing opinions or imparting information on such topics; and when by accident one State Forester did refer a request to such agency, it was promptly refused. Nevertheless, inquiry is necessary into questions affecting efficiency of this great project. As the State Foresters constitute the largest group in a position to express

TABLE I
GROUPING OF C.C.C. CAMPS WITH RESPECT TO
FEDERAL JURISDICTION

Federal department	Per cent of total Camps of all camps	
Department of Agriculture		
National Forest	495	
State Forest	296	
Private forest	184	
Levee	1	
Mosquito control	13	
Oregon-California lands	3	
T.V.A.	28	
Bureau of Animal In-		
dustry	6	
Biological Survey	21	
Bureau of Plant Industry	1	
Drainage	46	
Soil Conservation Service	455	
Total	1,549	71.78
Department of the Inter-		
rior (National and State		
Parks, etc.)	525	24.33
War Department	78	3.61
Navy Department	6	.28
Grand total	2,158	100.00

their opinions, and as many of them had responsibility for both State Forest and State Park camps, their opinions were asked by this Committee on the following point:

"The relative efficiency of continuing the system of political sponsorship for appointments, versus the substitution of a Civil Service status."

Had the information furnished been subject to publicity as to states and individuals supplying it, probably not a single state official would have been justified in running the risk of prejudicing his work by making frank statements regarding local conditions. In some instances this would have led to local recriminations, and in others possibly to more far-reaching repercussions. For this reason, all such communications were put under a pledge of confidence, and only the general results will be given. These are, however, based on a scrupulous regard for exactness in compilation and quotations.

Answers were received to this request from 42 states, or all but 6 out of 48. The 5 states of Arizona, New Mexico, Nevada,

Utah, and Wyoming were eliminated not having any state forestry organization and few or no state camps. No reply was received from one other state. The report therefore, deals with the remaining 41 states.

The completeness of these returns is of especial importance in considering the results obtained, as it effectively removes the possibility of the replies being swayed by prejudice either for or against the existing administration on any ground of party loyalty. The 42 states quoted are not merely a cross section of the United States, they are the United States, from coast to coast, including all shades of political and social thought and opinion. The results obtained from this questionnaire are therefore of considerable significance.

In replying to this question, one state official was in favor of the present system of political patronage. He says: "I feel that the appointments made for the present work are very efficient, and that those now made under the Democratic administration are very much interested in the success of the camps"; and "if all the present appointments would be permitted to stay in the service in the event that it would become a permanent organization I feel that it would be satisfactory for all subsequent appointments to be made from the Civil Service list, as they would be subject to the present experienced men."

We quote this because it is the only case in the entire list where a state official, responsible for these camps, has gone on record in support of the theory that success in the C.C.C. camps depends on the political affiliations of the appointees and consequent support of the "program." Even he is in favor of Civil Service if all those in were first assured of permanent jobs.

In one state the Forester expressed his opinion as to substitution of Civil Service but defended the efficiency of the camp

on the ground that the original appointments had been entirely free from politics and that the state officials had since then continued to support him in the selection of competent men, though taken from political lists.

In another state the Forester says: "We were always able to get well qualified men to staff the respective forestry camps, and the method of handling the Friant list has always been satisfactory and has not resulted in unusual delays."

The remaining State Forester who favors the present system bases his opinion on the fact that the congressional system of sponsorships removes the pressure of local legislators for appointments, on lack of experience with the Civil Service, and on the fact that any desired men could get their names on the list; and that, although the congressmen generally bring pressure to bear with regard to certain individuals, "that is not included within the regulations" (which is a misconception of more recent tendencies in setting up preference lists).

In 4 other states a change to Civil Service was favored, but the present system was said to be working well. Three of these states are entirely dominated by a system of political appointments for state forestry officials.

There remain 34 out of the 42 states. Of these, 12 states express the opinion that the system of political appointments is not safe and is headed for trouble, but that so far they have been able to prevent any great amount of damage and have held the original non-political personnel fairly well. In 9 of these states the forestry work is under a non-political commission, and in all 12 the state officials and even the congressmen have strongly supported the principle of efficiency in appointments.

In 22 states, or over half of those replying, the forestry officials responsible for the work are unsparing in their con-

demnation of the situation arising from these political appointments and the effect it had already had on the C.C.C. work and morale in their states.

For lack of space, only a few of the 32 individual opinions condemning the political system of appointments can be quoted.

1. "The system has had a very demoralizing effect upon the youth in the C.C.C. camps. Many believe that their future depends upon political endorsement."

2. "The whole arrangement is unsatisfactory, both to the congressmen and us."

3. "It first destroys the expected efficiency on the part of the enrollees and supervisory force and second, eliminates qualified men not of the political party. The efficiency has been reduced 50 per cent."

4. "It is common practice for political appointees to tell those in charge of the work, and the enrollees, that they cannot be fired, and it doesn't make any difference whether they work or not."

5. "Political insistence is growing stronger. I doubt if any one would recommend the continuation of the present system."

6. "It is extremely difficult to obtain high efficiency and keep up the morale of the force when strong political pressure is exerted in making new appointments."

7. "The system shows outstanding abuses in the favoring of inefficient men."

8. "No organization can function with the system of politically selected foremen and superintendents. Their relation is not based on knowledge and experience to do the job."

9. "It is becoming more difficult to discharge inefficient men, and bad trouble may flare up at any time."

10. "We will be getting a continually lower grade of men. Technical men are disgusted at the entrance of politics."

11. "It is bad enough now, but if it includes technical personnel it will be destructive of all efficiency and incentive to secure the best results."

12. "Political appointees are least desirable to exert a moral influence on the boys or contribute anything of value in educational lines. The camps are losing the ideals originally set up. It is a catch-all for job seekers. The Civil Service would provide greater efficiency than could ever be achieved under political sponsorship. The high standards are falling because political endorsees are taking the place of technical men."

13. "As long as we could pick our supervisory men on the basis of qualifications which we believed could produce results we got results, and the state's methods were fine. Then came the political endorsements, but we still had a chance to pick qualified men from a fair list. But the work appreciably decreased because unsatisfactory work could not be called to account without disturbing the politician. Then came the period of the politician picking the man and saying who should be appointed, and the work has gone to pot. Not only are the appointments political, but the rules and regulations, the jobs done and not done, and everything else is for political purpose. It would be far better to dispense with the C.C.C. entirely than to permit the present mess to continue."

14. "The present plan of divided responsibility for appointments is unsatisfactory, and it subjects the State Forester, at least, to unfair and unjust criticism. The present plan of selecting personnel on the basis of political sponsorship is loaded with dynamite for all concerned, and I believe that even congressmen would welcome a change of policy whereby the men would be chosen from an eligible list prepared by the Civil Service Commission."

15. "Civil Service status should unquestionably replace the present procedure, which makes it necessary to select most of the supervisory personnel from congressional lists. It is impossible to satisfy congressmen and at the same time secure efficient appointments."

16. "The appointee will not fully appreciate his job because it is not the result of his own individual effort, and it will seldom bring out his best qualities. He doesn't have the urge to work for advancement except by seeking additional political assistance, because the period he may serve has its limits. Men working under a political appointee will not always show him the proper respect because of his frequent lack of ability or training for the job, since these are of secondary importance in this system. For each appointment there are often twenty or more 'disappointments.' The ever present uncertainties do not help raise the morale of an organization. This procedure places an unfair and hazardous burden on the individual directing a project or project. It does not permit establishing personnel standards, which are of extreme importance in building an efficient organization."

These are not selected chance opinions. (The one opinion *favorable* to the system has been quoted.) They represent the final considered judgment of over three-fourths of the state officials responsible to the public for results, an opinion expressed after two years of experience and observation of the system.

Certain definite conclusions can be arrived at from this summary. It is generally accepted that in all but a very few states the state forestry administration had been kept remarkably free from politics, and had been conducted on the merit system. The personnel of the forestry forces was neither Republican, Democratic, nor Farmer-Labor. They have held their jobs through successive changes of administration because they were efficient and needed in protecting and conserving the forest resources of the state, and because this fact was recognized and their status protected.

When the C.C.C. camps were organized the original supervisory forces, including camp superintendents and foremen as well

as technicians, were filled on the same principle, and both in the U. S. Forest Service, the Department of the Interior, and the states men were appointed without inquiring into or ascertaining their political faith, but solely on the basis of their ability to do the work in hand.

This principle is inconceivable to partisan organizations, and aroused a suspicion that, since other than professed Democrats were being appointed, there could be no other explanation than that these federal and state officials were either covertly in league with the political opponents of the administration or were naively permitting themselves to be used as ignorant tools to secure public positions and patronage for the "opposition," thus unwittingly strengthening this opposition and threatening to bring the New Deal objectives to naught.

As to which was the more naive of these views, the question is debatable, but the situation, fed by violent complaints and false charges by disgruntled local politicians, led to the creation of the system of political endorsements of non-technical appointees, including camp superintendents and foremen, by Mr. Friant, the representative of Mr. Farley for the Department of Agriculture, and by the Department of the Interior. This did *for the time* take the political pressure off the state officials, which had originated in the county or local chairmen, and placed it in the hands of the Democratic congressmen, who were euphemistically termed "advisors." This measure inaugurated the second phase, in which the seeds of dissolution were sown. During this stage the task was attempted of securing efficient personnel, although taken from political lists. This effort was only partially successful, and at all times presented great difficulties. Where congressmen cooperated whole-heartedly, but little difficulty was encountered. On the other hand, wherever there was insistence on the appointment of definite individuals, the result was an

increased tension and friction. The reputation of the C.C.C., since it had been established on a firm foundation because of its original non-political character, still survived during this second phase.

Then came the third stage. Not only was the C.C.C. doubled in size, on the principle of working a willing horse to death, but a definite plan for putting all of its supervising personnel under Civil Service, which might have saved the situation, was abandoned, and Congress instead was promised control of the patronage thus created, in return for support of the general legislative program. These promises resulted in a sinister increase in the pressure put upon the state officials. Where, before, they might make their own choice and reject all unfit candidates, now there were set up preferred lists, and the quality of the appointees forced upon the states degenerated. It rapidly became more difficult to secure the discharge of inefficient men, and when with great travail and much testimony this was secured, it sometimes happened that sponsors succeeded in securing prompt reinstatement of the offender somewhere else. Increasing boldness and irritation were displayed by the more politically aggressive congressmen, which in some instances went so far as to jeopardize the positions of the State Foresters themselves, unless prompt and whole-hearted compliance with their wishes was manifested. At this point the decadence of the C.C.C. began to affect the morale of the boys in the camps. One remark can be quoted, which is typical. "It used to be pretty good, but they got in a lot of politicians, and the whole thing has gone sour." It can safely be said that what reputation the C.C.C. retains is now based entirely either on previous conditions no longer in existence or on the fortunate ability in certain states to maintain these non-political conditions in spite of the enormous and increasing pressure brought to bear to force a surrender.

RELATIVE EFFICIENCY OF NATIONAL PARK VERSUS NATIONAL FOREST CAMPS

The following question was asked of all State Foresters, for their opinion: "The relative efficiency of park camps versus forest camps, and the causes therefor."

This question was addressed to State Foresters for the reason, first, that the officials of the National Park Service are in the same position as those of the U. S. Forest Service. They cannot be asked to express to persons outside their own organization any opinions involving criticism of this organization or of service in other departments. Such opinion must be sought from officials independent of national organizations. In the second place, state forestry departments, in 20 out of 43 states having such departments, are in direct charge of State Parks, and consequently of the C.C.C. camps located thereon. These State Foresters, therefore, are fully as desirous of securing efficiency in park camps as in forest camps, and their comments are based on direct contact with and responsibility for both sets of camps. In 23 other states, where the forestry department does not have charge of State Parks or park camps, the State Foresters indicated this fact and made no comment or criticism of park camps. The remaining 5 states have no state forestry departments.

These 20 State Foresters, therefore, constitute at present the only body of men of adequate distribution on a national basis who have sufficient immediate contact with the work to be able to answer this question directly from experience, and not from hearsay or prejudice.

These 20 states are distributed geographically as follows: Northern, east of the Great Plains, 10; Southern, 10; Western, none. Again, as in the case of other inquiries, the results are entirely independent of political affiliations, and the officials are concerned only with the question of efficiency in the administration of

federal activities and expenditure of federal funds for which they are to a large extent responsible.

These 20 states are unanimous in the opinion that park camps are far less efficient than forest camps. The twenty opinions given dealt solely with administrative efficiency.

The reasons given for this relative failure of park camps are as follows, in order of emphasis:

1. Concentration of authority in Washington, resulting in prolonged, abnormal delays in administrative decisions. This affects: (a) appointments of supervisory personnel; (b) approval of plans for projects.

2. Insistence on detailed plans for all projects, regardless of size or importance, and refusal to delegate any authority either to subordinates in the Park Service or to state officials, who are held responsible for performance. This dovetails with point 1, and together results in a conspicuous loss and waste of federal funds.

3. Political sponsorship for technical as well as non-technical appointments. This has reached a point where in some states the state officials are now of the opinion that the situation is hopeless and that state park camps should be discontinued.

A few representative opinions are quoted.

As to comparative efficiency of park and forest camps:

1. The park camps accomplish about half as much as the forestry camps.

2. State park camps should be eliminated. The judgment shown has been conspicuously faulty. Unsuitable areas have been developed for recreation, using highly artificial plans and wasteful and inefficient construction.

3. The efficiency of the park camps is much lower than that in forest camps—due in part to the thought of spending very little money for special equipment

and material, along with the idea of utilizing labor for everything.

4. Work programs are far harder to initiate and finish under the National Park Service procedure than under the Forest Service procedure at present, and if I had the choice of having only park or forestry camps, quite frankly we would ditch the park camps without hesitation.

5. As to the relative efficiency of park camps versus state forest camps, there is no comparison. Park camps are inefficient; first, because of politics; second, because of lack of definite policy on the part of park officials; third, because of inefficient lack of policy and lack of organization within the Regional offices; fourth, because of the refusal of the Washington office to center authority in the Regional office and because of failure of the Regional office to give authority to Regional inspectors; fifth, because of a cumbersome, unworkable, inelastic system which combines too much detail and too literal interpretation of regulations. Nearly four months after some of our camps were in under the expanded program, the personnel was not complete.

As to insistence on detailed plans and consequent lowering of efficiency, and as to approval of plans:

1. There is a good deal of red tape in connection with the park camps, and the National Park Service tries to dictate details of the work which should be left to the state administrator.

2. Numerous miscellaneous projects which require no high degree of planning have to be set up and approved for the use of man power, even though no cash is required for materials. In the forestry branch of the E.C.W. we operate under policies laid down by the regional office, and are held to these policies, based upon inspections. Some of the large, expensive projects have to be approved, but the great bulk of them are planned by this office and execution goes forward under the general E.C.W. policies. In the park

work, every item has to be planned and approved.

3. Park camps are so hedged in with restrictions regarding the minutest details, requiring so much paper work and such a long chain of approvals for projects or securing supplies or equipment, as to make field operation extremely difficult and cumbersome and tied up with an interminable amount of red tape.

4. They have been very straight-laced in their plans and specifications, and so involved in red tape that they are hopeless. If the C.C.C. is to continue as a permanent proposition without tipping over from their own weight and reflecting on the whole forestry program of the nation, I think there should be still further decentralization. The forest camps I think are drifting for the same reason that the park camps were never up, and that is because of excessive overhead, straight-laced plans, and red tape.

5. Forestry projects are approved by our district headquarters, while projects of the park division have to be approved not only by the divisional office but also by the Washington office, which seems to be a very slow process. I have known of small projects in the park division requiring as many as ninety days for approval.

6. Another reason (for a 25 per cent loss of efficiency in park camps) is the long time that it takes us to get through contracts for our park work and to get park projects approved. Even projects involving only a few hundred dollars for materials may take several weeks for approval.

7. One reason for lower efficiency has been much greater difficulty in securing competent supervisory personnel. Another cause is the maddening delay on letting contracts and securing approval of appointments. Since all recommendations for appointments have to go through the office of the Secretary of the Interior, and a man cannot be put to work until this office is notified of his appointment by

the Secretary, it usually takes from two to six weeks to secure approval of an appointment.

8. The complaint that I have to offer is that neither the state agency nor the camp superintendent has enough latitude in going ahead with projects. The federal overhead is too cumbersome, and too bound up with red tape. There are too many inspectors in the field who assume too much of the detail in running the camp. Clashes of opinion frequently occur among the inspectors. Details of development are dictated against the wishes of the park authority, which of course is our own department. There is too much delay and wrangling before projects are approved and gotten under way. The relationship between the federal Forest Service and our state agency is, on the whole, very satisfactory and our department is given sufficient latitude to go ahead in most cases very promptly.

9. The trouble with the Department of the Interior is that decisions have to be made in Washington, with all the attending delays and unnecessary confusion. This holds for the appointment of personnel, the approval of projects, the transfer of personnel in the field, and similar items. Under the method of procedure now in vogue, which was not the case up until about April 1, 1935, practically everything must be sent to Washington. This so strangles the camp activities that it is next to impossible to make any progress at all. There is probably no situation that has been so wearing as this procedure of having to have everything done in Washington.

10. The work in the park camps is, of course, different. They call for more planning, more technical knowledge, but they are trying to do with emergency labor, not of the highest quality, and with very limited funds the same quality of work found in Westchester County, N. Y., and other State Parks where funds were adequate, where time was no factor, where

the supervision was of the best, and where the standards were of the highest. Their system of allotments is ironclad, allowing only \$7,000 or \$8,000 per camp per period for materials on approved projects; even though it may not be possible to use it on one, it cannot be transferred to another. This means a whole camp of 200 men maintained for a period in order to qualify for the funds, when possibly a side camp could do the entire job if money was available. In emergency cases projects are returned raising questions concerning a few cents in the price of cement and nails, notwithstanding the fact that projects were approved the week before and the week after in non-emergency cases carrying the same prices. The office work as a result of the foregoing is tremendous; far beyond the capacity of the limited number permitted for that work. All of this red tape, concentrated planning, and ironclad regulations might be justified if it resulted in more efficient parks, more beautiful landscaping, or a greater production; but unfortunately it doesn't. Many of these evils could be eliminated if they reduced the red tape by centering more authority to Regional Inspector, a greater respect for the desires of the State Park authority, and a regard for utility even though at the sacrifice of architectural purity.

As to concentration of authority in Washington and resulting delays in approval of appointments:

1. It takes weeks and months to select and appoint the personnel not only for the camps but in the overhead organization. There is one instance where this office and the regional office were in agreement from the beginning regarding the employment of a man to help in state E.C.W. work. The appointment was approved in one of the Washington offices without delay. But the appointment to this date has not been made.

2. In making appointments for the technical foremen for the forestry camps

takes about three days to clear our recommendations with the Regional Forester's office, while recommendations for appointments for the Park Service require the way from four to six weeks for O. K., and even then sometimes these appointments do not come through. Much the same situation exists in regard to other matters. These unwarranted delays were rather rough on the morale of the camps. The superintendents were inclined to say, "What's the use in trying to get anything worth while done?" It has seemed all along that the forestry agencies are much more inclined to cooperate with state authorities in putting over a worth while program, rather than to stick on insignificant details which might, in complying with the letter of the law, require the loss of thousands of dollars in efficiency.

3. We have little or no trouble with our Department of Agriculture camps, but we are having a terrible time getting qualified men for our park camps. In some instances in these camps, the companies have been ready to go to work before we have had a supervisory personnel in place, and in no instance have we been able to get engineers on the job prior to the time that camps came in. This means that the whole camp program has been delayed until the park engineers could get their boundary and topographical maps made. Also, we have been unable to secure an adequate number of landscape engineers and architects. There are none available in the state, and only one congressman has so far agreed that he would approve someone from outside the state.

As to political sponsorship of appointments:

1. It appears that such appointments (technical) have to be approved by the local postmaster, congressman, and even Secretary Ickes.

2. Back of all of this is not only politics but the fact that there are a number of men in the Park Service with high responsibility who have never had any ex-

perience in spending much money. They are small men in big jobs. It is something that cannot be helped, but it certainly retards the work on the ground.

3. Something should be done in regard to political appointments, especially in the Park Service of the Department of the Interior, for since the Secretary of the Interior requires the state official to notify the Secretary's office of any vacancy, stating the position or type of work to be done, and then wires the name of a lawyer or farmer or high school graduate for the position of architect, landscape foreman, or civil engineer, it is indeed a sad state of affairs. In the park camps all appointments are political with the exception of the mechanic and blacksmith—the only ones which might be political. Procedure in the Forest Service is not so bad, in that we are allowed to select from a long congressional list, and in that way are able to get good men. We have had two specific cases where men were sent down by the Park Service, and we were instructed to assign them to a camp, and additional allotments were made to cover their salaries, even though the personnel of the camp was all that was allowed under the park regulations. I have made quite an effort to bring pressure to bear on the Secretary of the Interior to allow us to make these appointments without interference, but to no avail. To be frank, the whole Park Service set-up is so disorganized I am about ready to reach the conclusion that it is not worth the price.

4. The political domination of appointments in park camps is more complete than in forest camps. In our forest camps we are furnished a wide choice of men or advisors' lists from which we make appointments, but not so in park camps. There we are restricted to a list of one man for each job, and no new candidates are offered unless the ones recommended are found upon investigation to be unqualified. The latest thing is an order

from the Park Service notifying us that any members of supervisory and facilitating personnel in park camps who do not have political endorsement will be dropped after December first. This will hit some of the technical men who were taken on one or two years ago without political endorsement.

5. There are several instances where we have been told to take men that we did not believe were qualified for the work. The whole situation is such that there is a frequent thought in my mind of asking the state authorities to discontinue park work.

6. When the park camps came in, all appointments had to be approved by the Secretary in Washington, while the appointments in the forest camps were strictly in the Forest Service. Within the first year the system was changed, so that park selections have been initiated in Washington; and recently we have learned that members of congress have personally communicated with men offering them places in the new camps. We are then notified by park authorities of the appointment. The principle is dead wrong, since we are responsible for the supervision and results, yet the personnel are selected for us. Morale is no doubt weakened.

There seem to be family difficulties as between Democratic senators and representatives, and we have had one selection by a representative cancelled and another substituted by a senator before the first one started work. The forest camps are by far cleaner of political pressure.

7. The difficulty in getting rid of incompetent appointees greatly handicaps the work. The difficulty of proving incompetence to the recommending congressmen and to the officials in Washington makes it next to compulsory to continue employing such help both in the camps and in the procurement office. I do not think that Mr. Roosevelt can possibly realize the extent to which the Department of the Interior appears to be secur-

ing support of lavish distribution of privileges; even mechanics, blacksmiths, and tool keepers have to be appointed upon a congressional recommendation.

8. In the park camps it is apparently impossible to get rid of a man if he is no good.

ADVISABILITY OF DISCONTINUING THE DUAL CONTROL OF C.C.C. CAMPS BY ELIMINATING THE U. S. ARMY

The above question was sent to the State Foresters of 43 states, omitting Arizona, New Mexico, Nevada, Utah, and Wyoming. Replies were received from 30 states, lacking one northern and two Great Plains states.

Sixteen of these state officials were in favor of continuing the present system of dual control now in vogue, without any suggested modification of the organization.

Eleven additional state officials desired that the Army be retained, or kept in the picture, but advocated a definite change of organization. The plan which was proposed by most of these states was to restrict the participation of the Army to the continuance of their existing functions with reference to supplies and health service, from base camps only, and withdrawn from the dual control of the work camps. The responsibility for these work camps should be concentrated in the hands of the civilian authorities, who are held responsible for the projects. The work camps should be reduced in size.

Thirteen states favored the complete elimination of Army participation and the assumption of full control over both the camp discipline and the supplies, health, and other services by the civilian branches.

Thus a total of 24 states out of 40 desire the modification or elimination of the present dual control in the work camps, but on the other hand, 27 out of 40 are in favor of retention of Army participation, either in full or confined

base camps and supply and health service, with 11 states occupying this middle ground.

Of the 13 states which desired the complete elimination of the Army, only one expressed disapproval of the character and efficiency of the Army personnel. One emphasized the popular fear of military influence in training youth, and one the superior attitude of Army officers, the lack of sympathy with the purposes of the camps. One thought that a reduction in the size of camps would make dual control unnecessary. One spoke of the lack of coordination of the educational program. One stated that the efficiency of the program was reduced about 10 to 12 per cent through the system of dual control including the Army. The remaining 7 emphasized the confusion, waste, and divided responsibility resulting from the dual control. The general conclusion is that the Army personnel is free from political influences, and for the most part competent and above suspicion of graft, that it has handled the discipline and health service commendably, that the supply service has functioned cheaply and fairly efficiently, but that the food, though sufficient in quantity, is badly prepared, due to persistence in the policy of employing enlistees as cooks and not hiring experienced men for this purpose. The "die-hard" objectors, as shown, point to the inherent difficulties of a dual control which, regardless of its temporary or emergency advantages and the high standards and commendable services rendered, are not considered as an efficient or desirable permanent organization for a civil undertaking, either public or private.

SUMMARY OF REPORT OF THE COMMITTEE

On the basis of the information presented in the three preceding reports, the Committee presents the following recommendations for action:

1. The system of political sponsorship

should immediately be terminated, or it will definitely weaken the entire structure of the E.C.W. The original non-political control of all appointments, on which the achievements and the still surviving good reputation of the C.C.C. camps were dependent, must be restored. This should be accomplished by reviving the original authority of the federal and state officials in the matter of appointments and prohibiting the consideration of political sponsorship in selection of personnel. If this can only be accomplished by Civil Service, then that method should be used.

2. The system of political sponsors, based on the opinion that such sponsorship was necessary in order to insure support of the New Deal and the present administration, has developed serious flaws and is directly responsible for the creation of unfortunate conditions now existing, which if they develop further along present lines may finally lead to the abolition of the entire program, with the common consent of the forestry profession and the public.

3. The system of political sponsorship makes more enemies than friends for congressmen, and discredits these public servants in the eyes of their constituents. We believe that its abolition would be welcomed by the more enlightened and experienced members of Congress.

4. The system adopted in 1935 by the Department of the Interior, in insisting both for new and existing technical employees that they secure congressional Democratic endorsement, destroys the very foundations of efficiency in federal service, and goes far beyond any yielding or compromise admitted by the Forest Service in the matter of appointments for *non-technical* employees.

5. The Forest Service supervisory personnel have, under direct orders, been compelled to insist upon compliance with this system of political sponsorship. This is the first time in the history of the U. S. Forest Service that such a situation

has arisen. The result is that the reputation of the Forest Service has suffered, and many of its personnel have been unjustly exposed to the shafts of political vendetta. This is even more true of State Foresters, especially when not thoroughly protected by non-political boards of forestry or conservation.

6. The Department of the Interior in the administration of the E.C.W. has been grievously at fault, primarily in its inability or unwillingness to decentralize its supervision or delegate responsibility to the state officials who will be held responsible by the public for results, or to delegate to its own subordinates any measure of trust or responsibility, and thus concentrating all final authority in the Secretary of the Interior, on the presumed theory that only in this way can efficiency and honesty be secured in this Department. This has resulted in serious loss and waste of public funds, and endless friction and loss of energy and time on the part of cooperating agencies.

7. The Department of the Interior is further to blame through applying the same policy of centralized authority to all appointments. This has not only resulted in inexcusable loss of efficiency through delays in securing needed personnel, but has signally failed in preventing the establishment of the worst possible system of political sponsorship, not only by congressmen but by local politicians, to the great loss and threatened destruction of the enterprise as a whole.

8. We regard it as imperative that some efficient central coordinating authority be created, absolutely divorced from political control, and capable of decentralized responsibility, so that the camps in each state shall be operated consistently under one unified authority.

9. We favor, for the present, the retention of participation of the U. S. Army in the furnishing of standard, nonperishable supplies, equipment, health and sanitation

service, but regard it as desirable that this should be done by the creation of base camps or headquarters, and that due control of work camps in the matter of discipline and supervision be terminated, giving full single authority over the work camps to the agency responsible for the work.

10. We favor the reduction in size of the work camps, and greater elasticity in organizing smaller side camps for economical and efficient continuance of work projects and maintenance of existing improvements which otherwise might be permitted to deteriorate for lack of funds for maintenance.

11. If political appointments cease and all overhead are made subject to Civil Service; if greater decentralization is insured, and the size of camps made more adjustable to the requirements of the jobs, then and then only we favor placing the C.C.C. on a permanent basis.

These reports and recommendations amended have the approval of committee members representing the following Sections of the Society: Allegheny, Appalachian, Columbia River, Central States, Guadalupe Intermountain, Minnesota, New York, Northeastern, Northern Rocky Mountain, Ozark, Puget Sound, Southeastern, Southwestern, Washington, Wisconsin.

The California Section representative does not approve of the report on "The relative efficiency of National Park versus National Forest camps" being presented and does not approve of Points 1 and 2.

The Intermountain Section committee declined to approve paragraphs 6 and 7 of the conclusions, and offered a modification of paragraph 11, which was accepted. They advised omission of the discussion of political development in the C.C.C.

The New York Section representative objected to the sentence on the theory of political support.

The Allegheny Section representative is not in favor of a permanent C.C.C.

The Northern Rocky Mountain Section representative believes that sanitation and health service can be as efficiently rendered by civilian organizations.

With these exceptions the report is approved by the above Section representa-

tives, constituting 17 of the 18 Sections of the Society.

The session then adjourned, concluding the Thirty-Fifth Annual Meeting of the Society of American Foresters.

MEETING OF THE DIVISION OF FOREST EDUCATION

MONDAY EVENING, JANUARY 27, 1936

THE second annual meeting of the Division of Education of the Society of American Foresters was called to order at 7:30 P. M. by S. T. Dana, acting as Chairman in the absence of Henry Schmitz.

The minutes of the first meeting of the Division, held January 28, 1935, at the Shoreham Hotel, Washington, D. C., were read and approved.

Announcement of special committees appointed during the year by S. T. Dana, previous Chairman of the Division, was made as follows:

Teaching of pre-forestry subjects: Henry Schmitz (Chairman), Joseph Kittredge, K. W. Woodward, H. P. Brown, S. W. Allen, and C. H. Guise.

Specialized curricula: S. N. Spring (Chairman), Myron Krueger, D. S. Jeffers, Ovid Butler, W. Kynoch, and R. C. Bryant.

Forestry degrees: C. F. Korstian (Chairman), D. M. Matthews, G. A. Garratt, Carl Forsaith, and P. M. Barr.

The place of the ranger school in forest education: Robert Craig, Jr., (Chairman), J. F. Dubuar, E. B. Hurst, and Peter Keplinger.

The Secretary of the Division reported that he had compiled a list of the present members of the Division and that copies have been forwarded to Franklin Reed, Executive Secretary of the Society, and to S. T. Dana; and also that, as a result of the data furnished by the forest schools, he had prepared his annual paper, "Forest school statistics for 1935; degrees granted and enrollments." (This was published in the JOURNAL for February, 1936.)

Results of the election of officers for

the year 1936 were announced as follows: Chairman, Henry Schmitz; Vice Chairman, D. S. Jeffers; Secretary-Treasurer, C. H. Guise; members of Executive Committee, D. B. Demeritt and D. M. Matthews.

Mr. Dana stated that the papers to be read had been approved by all members of the responsible committees, that they were to be considered as progress reports, and that final reports were to be submitted at a later date.

The report of the Committee on Proposed Schools of Forest Practice¹ was read and approved, and the committee discharged.

Mr. Dana referred to the outline for a course in forest economics which had been prepared and sent to all forest schools for comment and criticism. Copies may be had from Dean Dana.

It was stated that all members of the Society of American Foresters who are engaged in educational work are automatically members of the Division, and that at present the membership consists of 85 men from forest schools, and that 9 others have requested membership.

H. H. Chapman presented a report on Curricula in Forest Schools.¹ This able and searching study emphasized among other points the fact that in no other profession are the demands on basic training so broad or of such comprehensive character as in forestry. Discussion followed, and brought out many points of interest.

S. N. Spring reported for the Committee on Specialized Curricula in Forest Education.¹ He emphasized that the report was entirely preliminary in nature, and that much time would be necessary before definite conclusions could be placed

¹ The report will be found among the Committee Reports in this issue of the JOURNAL.

before the Division. The report as given is to be prepared in more detail for submission to the Division. This report elicited much comment.

The Place of Ranger Schools in Forest Education was the subject of a report by Robert Craig, Jr. This brought considerable discussion and comment from members of the Division, with very favorable reports on the quality of the field work done under actual conditions by graduates of schools giving vocational instruction in forestry.

A report on The Teaching of Pre-Forestry Subjects² was read by Mr. D. S. Jeffers in the absence of Mr. Schmitz. The task of the committee included a study of the following questions: (1) Whether pre-forestry courses are now so taught as to be of maximum value to prospective foresters, and if not what changes are needed; and (2) whether these courses might be so re-organized as to require less time than is now devoted to them, thus making it possible either to include a larger amount of forestry in the curriculum or to cover a wider range of non-forestry subjects than is now possible in most institutions.

It was emphasized that, although not always recognized by forestry educators, the subject matter dealt with in forestry courses *may* have just as high an educational and cultural value as pre-forestry courses taught in other departments of the institution in question. The committee responsible for this report recognizes the need for further intensive study of the subject, and plans to make a final report at the next annual meeting.

C. F. Korstian reported for the committee that is studying the subject of forest degrees. After further study, a final report will be presented to the Division.

Mr. Dana asked if the procedure at the annual meetings was satisfactory. Mr. Korstian asked if in the future it would not be possible to concentrate discussion on one or two of the committee reports.

Mr. Dana said he thought it would be possible to do this, and he recommended that Mr. Korstian's suggestion be followed. On motion of Mr. Jeffers, a rising vote of thanks was given to H. H. Chapman for his notable services in carrying out the study on forest education and the forest schools.

Mr. Winkenwerder presented the following statement as a motion: "The recent expansion in the forestry and other conservation activities of the federal government has led to the inauguration in several educational institutions of programs looking to professional training in forestry and to so-called pre-forestry programs. This development is in spite of the prospect of an early decrease in the opportunities for federal employment and in spite of the adequacy of existing schools of forestry to take care of the normal demand for foresters. In view of this situation the Division of Education of the Society of American Foresters desires to go on record as follows:

1. It deplores the establishment of new schools or departments for professional training in forestry except where the need for such schools or departments is clearly demonstrated, and then only provided changes are needed; and (2) whether these courses might be so re-organized as to require less time than is now devoted the standards for professional training set by the Society can be promptly and satisfactorily met.

2. It welcomes the introduction of non-professional courses in forestry in colleges and universities, as a matter of general education and as a part of the training of students in agriculture, and also the inclusion of research and extension in local forestry problems at institutions in a position to give these activities adequate financial and technical support.

3. In properly equipped institutions it favors facilitating a student's preparation for subsequent attendance at an approved school of forestry by providing an ade-

²The report will be found among Committee Reports in this issue of the JOURNAL.

quate and convenient grouping of the subjects necessary for this purpose.

4. It disapproves of the establishment of so-called pre-forestry curricula containing instruction in forestry, on the ground that such instruction necessarily crowds out basic non-forestry courses and that it is seldom of a quality comparable to that offered in the schools of forestry approved by the Society.

5. It urges the Council of the Society to take such action as it deems appropriate and effective to guide the development of forest education along these lines."

On motion of Mr. Korstian it was voted that the report be adopted as read.

Mr. Lentz asked what will be the position of the Council on some of the new schools (such as one that he described). Will the Council take some definite action in such cases, as for example informing the faculty of the position of the Society? Through the chairman Mr. Chapman answered that the authorities at these schools had been furnished with the official report of the Society on the Forest Schools. Mr. Chapman pointed out that the Society must deny membership to graduates of such schools, or lose its influence.

The meeting then adjourned.

R. P. HOLDSWORTH,
Secretary, Pro Tem.

ORGANIZATION MEETING OF THE DIVISION OF PRIVATE FORESTRY

MONDAY EVENING, JANUARY 27, 1936

As authorized by the Constitution of the Society, application to the Council for a Division of Private Forestry was made by twenty members of the Society. The Council approved the application and an organization meeting was announced in connection with the 1936 annual meeting of the Society. Emanuel Fritz, who served during the past year as Chairman of the Committee to organize the new Division, was unable to be present, and requested A. E. Wackerman to act as Temporary Chairman of the organization meeting.

THE meeting was called to order by the Chairman and conducted according to the by-laws submitted to the Council for its approval. The report of the nominating committee (J. B. Woods, Hubert Work, and Edward R. Linn) was received and the following officers were unanimously elected: Chairman, Emanuel Fritz; Vice-Chairman, Austin Cary; Secretary-Treasurer, A. E. Wackerman; additional members of the Executive Committee, W. J. Damtoft and Russell Watson. In the absence of the Vice-Chairman and Chairman, Wackerman continued as Chairman and appointed Robert Moore as Temporary Secretary. A paper prepared by Fritz, outlining the purpose and field of work of the Division, was read by Wackerman and is appended. By-laws as presented to the Executive Council by the organizers were discussed and approved with only minor changes.

The Division membership includes foresters in private employ or serving as consulting foresters or as managers of their own forest holdings, and others who indicate their desire to affiliate with the Di-

vision and are accepted by the Division Executive Committee. Only members of the Society in good standing are eligible. Dues of one dollar per biennium were approved.

An open discussion followed of various topics which had been suggested as matter suitable for consideration by the Division. They included: relation of the federal acquisition program to private forestry practice; accomplishments of forest management to date; the amount of timber that can be safely carried by a private owner; the extent to which public agencies should offer consulting services; and means of eliminating from forestry publicity propaganda for public agencies, instead of unprejudiced dissemination of forestry facts. Concrete examples of recent articles which were held to express a biased viewpoint and to aim at inculcating pre-conceived ideas and conclusions were discussed. All foresters in private employ were urged to join the Division, and others interested in private forestry were invited to affiliate with it.

A. E. WACKERMAN,
Secretary-Treasurer.

THE FUTURE OF PRIVATE FORESTRY

By EMANUEL FRITZ
University of California

IN EUROPEAN countries private forestry effort is of outstanding importance. It furnishes a balance wheel to the public effort. It determines whether or not the expense of growing a crop of timber is warranted by the returns realized from the sale of the products. The necessity for justifying costs stimulates not only the private foresters but also the public foresters to performing their work with dispatch, economy, and due consideration of actual needs. European private forestry is as much respected by the public as is government forestry. American foresters travelling in Europe usually include private forest properties in their itineraries, and return with glowing accounts of the excellence of the private accomplishments, the high order of the professional spirit among private foresters, and the general acceptance abroad that private forestry has an important place in the general forestry scheme.

What is the situation in the United States? We find that here private efforts are but little appreciated; that private foresters are more or less submerged because of their small number and dispersion of employment; that the major American forestry effort is directed toward increasing the dominance of the federal agencies, and that much aid is promised for the removal of the man-made obstacles to private forestry, but little is actually accomplished. We find, further, that federal monies are being lavished upon public forestry in amounts far above what the expected results seem to warrant. We see a powerful publicity office, maintained at public expense, occasionally holding up European policies and practices as examples, but creating the impression that private initiative in America is impotent, or that it cannot be trusted to practice an

adequate kind of forestry, and creating sentiment for centering all forestry efforts in the government.

It is a serious situation. Whatever be the truth as to the government's attitude toward private forestry, it is certain that it has not been too friendly. And that is serious enough.

This state of affairs has already brought more than a murmur of disapproval from those members of the Society of American Foresters engaged in private employ, and even from some in public employ. Not a few have expressed loss of faith in the Society. Private foresters feel insecure and are uncertain of what the government is actually going to do. They don't know whether to be guided by promises or by acts. In this country the private forester is fighting for his existence.

No private forester to whom I have spoken begrudges the government its huge monies available for forestry, none of them want to see the standards and ideals of the Forest Service lowered, none want to see encroachments made upon its general policies toward existing National Forests. Yet many members of the Society, within and without the public services, feel that the government has gone far enough.

What can be done about it? The first step seems to be the organization of private foresters and those others who believe in private forestry, for purposes of interchanging ideas; studying the pros and cons of private forestry; assisting each other in extending forestry to private owners; presenting private forestry problems to the public agencies, and to the Society itself; and in general, to offer this group a medium for articulating its problems, views, and needs.

It would be exceedingly unwise for this

group to break away from the parent Society to form a new one. Their interests and objectives would be only weakened thereby. Furthermore, private foresters, if understood correctly, are interested less in their personal aggrandizement than in the advancement of genuine forestry, as they see it. They possess a unanimous attitude toward forestry, and an abiding faith in its desirability, necessity, and feasibility. Their faith is such that some have invested personal funds in forestry, while all are taking the usual risks of private enterprisers. They are certain that private forestry can be successful, provided the obstacles to its practice are removed. Fortunately, the machinery is available for organizing private foresters into one group *within* the Society.

I had the privilege of serving on the committee for the Revision of the Constitution in 1927-1929, and late in 1927 or early in 1928, when there was talk of the grazing group breaking away from the Society, I suggested a provision, later adopted as Article XII, under which "subject divisions of the Society may be authorized by the Council upon the written petition of twenty (20) or more members of the Society engaged in the special field of forestry to which the division pertains. . ." Sensing the desirability and need of a separate division for private forestry, I informally sounded out the Council as to its feeling toward organizing such a division. Assured of its interest, definite request was made for authorization and appointment of an organization committee. This committee has prepared by-laws which have been adopted by the Council. It now remains for this assemblage to launch the Division by electing a set of officers.

The objects of the new Division of Private Forestry are given in the by-laws as "It shall be the object of the Division (1) to promote within the Society and without, a sound approach to the in-

troduction and practice of private forestry; (2) to extend opportunities for foresters in private employ; and (3) to secure greater participation in the affairs of the Society by private foresters."

As to membership the by-laws read:

"Membership in the division shall be open (1) automatically to all members of the Society who are engaged either wholly or partially under private employ and (2) to other members of the Society by application to and election by the Division's Executive Committee. Applicants for membership may signify their desire to become affiliated with the Division either orally or in writing. Elections to membership shall require the unanimous vote of the Division's Executive Committee."

Note that one objective is to "secure greater participation in the affairs of the Society by private foresters." This is an earnest of the committee's feeling that many private foresters have felt they have been ignored and that, separately and individually, they have little voice. The new Division offers the group an opportunity to become articulate.

It was the feeling of some from whom I sought advice that membership should be limited to foresters in private employ. The committee, however, was strongly of the opinion that such a limitation might foster within the Division a line of cleavage between members in public and private employ. Furthermore, the committee was convinced that there are many foresters in non-private employ who recognize and understand the problems involved in effecting private forestry, and whose counsel, advice, and aid would be an element of strength. Therefore, the committee has made membership open to non-private foresters, but whereas private foresters are members automatically, the non-private can become members only through election. The committee hopes that all interested private foresters will join the new Division at once and participate actively in its affairs, and that foresters in public

employ who are actively interested in private forestry will join with us.

What can the new Division do? For its own field of interest it can serve exactly as the parent Society endeavors to serve for all branches of forestry. It is proposed that the new Division meet at least once a year, at the time and place of the parent Society's annual meeting. It is proposed, also, to set up committees for study and report upon various problems affecting the advancement of private forestry; the status of foresters in private employ; legislation that might be proposed from time to time, affecting the private practice of forestry and the practitioners themselves; the relation between private foresters and public forestry agencies in the matter of offering consulting services; various national problems and legislation proposed to meet them, in their relation to private forestry; and many others. There is plenty for the new Division to do, although I hope it will not attempt more in its infancy than its resources give it power to accomplish.

What should be the attitude of the new Division in controversial matters? The answer is obvious. Its attitude must be friendly, helpful, and tolerant. There is no room in the Society or in forestry for internal strife, animosities, or intolerance.

From the very outset the new Division must have not only ideas but also ideals. The prospective members believe in forestry. They believe in private initiative too. Their goal is forestry on private lands. If it becomes necessary to defend the doctrine of private initiative in forestry, I believe they can be trusted to do it gracefully and with self-restraint. It is not the function of the Division to concentrate on building up sentiment within the Society on economic or political grounds. Rather its principal function should be the discussion of those questions that affect its members in the orderly pursuance of their proper objectives. Forestry is served best by a united profession, and there must be at all times complete freedom to discuss disputed points.

The way for the private forester is not easy. Not only is there official apathy toward private forestry, and the handicap of public ignorance of its problems, but there is also the distrust of foresters by timberland owners, a distrust created largely by foresters themselves. But private foresters are practical idealists. They have succeeded in the past as far as the man-made inhibitions permitted, and they should succeed even better in the future by virtue of having their own discussion group.

REPORT OF SOCIETY COMMITTEES

COOPERATION TO IMPROVE FOREST PRACTICES IN THE SOUTH

A GREAT change has taken place in southern logging operations during the past several years. Heavy logging methods have largely been abandoned in favor of more flexible methods. It is true that some operations still use steam skidders, but their number is small. Many, of course, still use railroad logging, but without skidders. A great many operations in both shortleaf and longleaf never used steam skidders, but used various methods of animal skidding and hauling to get logs to the tracks. Most of the steam-skidding was in the longleaf pine belt because of the practice of cutting logs of tree length. Animal hauling by means of big-wheel carts, however, was also common in long log operations.

Shortleaf pine operations, because of the practice of cutting short logs, generally used wagons (both four- and eight-wheel), bummers, or other contrivances with teams of horses or mules to bring logs to the spur railroad tracks. Not all logging was done by animals, however, as a number of operations used skidding machinery of one kind or another, especially in rough country and where there were numerous swampy areas. Some still use this method, but their number is rapidly diminishing or they restrict power skidding to areas difficult for any method but power skidding.

The most striking thing about present-day logging in the South is the widespread use of trucks for log hauling on both large and small operations. Thousands of log trucks of all kinds and descriptions daily are hauling logs from the woods to the mills or to railroad loading points. Teams are generally used to bunch the logs and load the trucks, although some tractors are used. Each operation, of course, is adapted to its own particular circumstances and no two are exactly alike in every respect.

Without going into detail, it is sufficient to note that the type of logging now widely in use throughout the South is exceedingly flexible and permits the application of selective cutting on a commercial scale. With heavy railroad construction and skidder investments, clean cutting of all timber with any realization value whatever was necessary to spread the fixed costs over a large volume of timber. With flexible logging and light equipment, there is no imperative need from a logging cost standpoint to clear-cut.

Much of the logging in the South is in second-growth timber which does not have as great a volume per acre or trees as large as virgin timber. Logging trucks naturally fell heir to logging the second-growth stands as well as the numerous scattered tracts of timber too small or remote to justify railroad construction.

As roads and highways were improved and extended throughout the entire South, small mills found it possible to log by means of trucks. Formerly, where small mills operated at all they depended upon wagon hauls, and naturally their operations were limited to a small area and were comparatively few in number.

Small mill expansion on a large scale was made possible by truck logging and truck hauling of lumber. Small operators pioneered in truck logging because it greatly enlarged their available timber supplies. Truck logging has proved successful, and the large mills are rapidly adapting it to their own large scale operations. While they have not, generally, abandoned their logging railroads altogether, many are using trucks to haul logs to main-line logging railroads, thus eliminating spurs. The combination of a logging main-line railroad with a truck haul to the main line supplemented with direct truck haul to the mill will very likely become the general logging practice for

large operations in the South.

Some large mills, most of the medium sized mills, and practically all of the small mills will find truck logging most satisfactory and economical. Some of the very small mills will probably continue to move frequently to keep close to their timber supplies, and will use trucks to haul their lumber away from the mill instead of logs to the mill.

Truck and tractor logging, because of the lack of large fixed logging charges, such as spur construction, makes it possible to operate economically with only a comparatively light cut per acre. Selective cutting, therefore, is possible from a logging standpoint and is rapidly becoming the order of the day in the South.

Small trees are unprofitable to handle, especially for large mills, and consequently are left standing. It is well known to the industry that when trees are left standing they will grow, which gives cut-over land a realistic value for another timber harvest in the near future rather than a theoretical value for another harvest in the remote future under clean cutting. The value of selectively cut-over lands is enhanced not only by the fact that another cut will soon be available from them but because with truck logging it is possible to cut economically the new crop of timber.

Present day cutting practices differ considerably between large mills and small mills, shortleaf pine and longleaf operations, in various parts of the South. In general, small mills cut their timber to a much smaller size than do large mills. East of the Mississippi River timber is cut to a smaller size than is generally the case west of the river, probably because there is less large timber available. Few, if any, shortleaf pine operations remove all timber when they cut, and those that cut timber only to 15 inches on the stump leave a good stand, on the average.

Selective cutting of a high order is rapidly gaining favor, and at least eight

southern pine operators select and mark the trees to be cut and leave a well distributed stand of trees, including some of the larger sizes, for growth and a future harvest within a comparatively short time. Several other companies select and mark seed trees to be left. Many others practice less elaborate selective cutting by not cutting trees below a fairly high minimum diameter, usually around 12 to 13 inches on the stump. The majority of the companies practicing sound selective cutting are based on selecting and marking the trees to be cut and those leaving seed trees are large operators.

The southern lumber industry, both pine and hardwood, has demonstrated that it is progressive and anxious to adopt and put into practice the best methods of extracting forest products. The fact that the industry has adopted modern methods of logging is evidence that whatever is sound and practical will be used. The rapid spread of real selective cutting by both large and small operators is further evidence that many southern lumbermen seek permanence for their operations, and will put into practice that which is proven to be practical and profitable.

The Committee on Cooperation to Improve Exploitation Practices calls attention to the fact that southern topography, weather, and improvements such as roads combined with the development of practical logging trucks and tractors, have made possible the widespread adoption of logging methods adaptable to selective cutting, and that many companies have made and are making real progress in providing for a sustained yield. The Committee also calls attention to the fact that because of the very large number of operating forest products companies and forest land owners, some means should be provided for informing them in a practical way of the possibilities of technical forest management.

The Committee has no specific suggestions as to what the Society can do to co-

erate in improving exploitation practices in the South. Already several agencies are working in this direction, including the Southern Forest Experiment Station, Region 8, and the Forest Products Laboratory, all of the U. S. Forest Service; the state forestry departments; and the Southern Pine Association. A number of individuals are also active in private capacities. The extension foresters likewise are promoting better timber cutting so far as farm timber lands are concerned.

Possibly some coordinated action by all these agencies could be arranged so that selective demonstrations could be conducted for the purpose of informing a large number of timberland owners of the possibilities of selective cutting and sustained yield operations. Much of the South's timber is in farm woodlands and small ownerships, and these many owners must bear a large share of the responsibility for local sustained yield in the South.

For detailed information on truck log-

ging and cutting practices, together with cost and efficiency data, attention is called to studies already made and now under way by the Southern Forest Experiment Station and the Pack Fellowship Board, by the Forest Products Laboratory, and by state forestry departments. It is not considered germane to this report by the Committee that details should be elaborated upon here. However, accompanying this report are more specific statements on particular phases of timber exploitation by members of the Committee, which are available for reference or for articles in the JOURNAL.

Your Committee recommends that this report be accepted as final and that the Committee for the South be discharged and one appointed for another region.

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G. D. MARCKWORTH

C. B. WEBSTER

C. C. KUEHN

LENTHAL WYMAN

A. E. WACKERMAN, *Chairman.*

STATE FORESTRY ORGANIZATION

THIS is the second annual report of the Committee on State Forestry Organization. The first report was presented a year ago, at the Washington meeting, and appeared in the March, 1935, issue of the JOURNAL OF FORESTRY. No formal meeting of the committee was held during the past year, chiefly because of its widely scattered membership. This report is the outgrowth of these informal discussions, supplemented by considerable correspondence with state forestry officials, and supported by a series of special studies in state forest administration in progress for several years under the direction of the chairman, at the New York State College of Forestry.

The planning of this progress report was not an easy task. The difficulty was not in the lack of material, but in choosing from the wealth of subject matter that deserved consideration. At first there was a strong desire to consider only current administrative problems and practices, such as the political invasion of personnel, the strengthening of the merit system, the development of personnel management, the in-service training of personnel, the stabilization of fiscal support, the effective integration of forestry with other major conservation activities, and a closer coordination of regular and emergency conservation work. That these and many other current problems and practices in the rapidly widening field of state forest administration deserve prompt and thoughtful consideration is common knowledge among foresters engaged in the direction of forestry affairs. The Committee, however, feels that the whole subject of state forest administration has received so little consideration by the Society in recent years that in the long run it will be more helpful if at least a part of this report is devoted to a reviewing of significant administrative developments, a sketching of exist-

ing administrative conditions and setting up a summary survey of recent administrative changes, a brief discussion of some ending administrative principles, a listing of pressing administrative problems, and a submission of general recommendations for additional administrative studies and reports.

Fifty-one years ago California set the first state agency, designed to be of permanent character, to handle her forestry affairs. On March 3, 1885, a law was enacted creating a state Board of Forestry of three unsalaried members. This law gives California the distinction of being the first state to establish an administrative agency to handle forestry matters. In less than three months after this significant development in California three other states (Colorado, Ohio, and New York) also enacted laws creating administrative set-ups in forestry. In three of these four states (California, Colorado, and Ohio) the forestry set-ups were of short duration, lasting only 3, 6, and 10 years, respectively, but after some years of dormancy, forestry was re-established in three states. In New York alone, there has been an unbroken development from the original administrative set-up made possible by the law of May 15, 1888, which is generally accepted as the first comprehensive forest administrative act in America.

Prior to 1900, state forestry was concentrated chiefly in the eastern and Lake states. During the next decade three Pacific Coast states (California, Oregon, and Washington) and three southern states (Maryland, North Carolina, and Louisiana) set up forest administrative agencies. Louisiana was the first southern state to make legal provision for forestry. In 1904 an act was passed providing for a department of forestry and a fire warden system. The next year (1905) North

Carolina created the office of Forester in the State Geological and Economic Survey, and the following year (1906) Maryland established a state Board of Forestry with seven members empowered to employ a technically trained State Forester. The same year Kentucky created a state Board of Agriculture, Forestry, and Immigration. During the next fifteen years a few other southern states undertook forestry work. Beginning with 1921 the remaining southern states took on forestry, in those succession. In 1921 a Bureau of Forestry was established in the Department of Agriculture in Tennessee. In 1923 Alabama created a Commission of Forestry. Two years later (1925) Georgia established a Department of Forestry (changed to a Department of Forestry and Geological Development in 1932), and the same year Oklahoma created a Forest Commission. The next year (1926) Mississippi set up a Commission of Forestry, followed in 1927 by a Board of Forestry in Florida and a Commission of Forestry in South Carolina, and in 1931 a Commission of Forestry was established in Arkansas, the last of the southern states to establish an administrative set-up to handle forestry matters.

Forty-two states now have some form of an administrative set-up for forestry. That these state forestry set-ups are conspicuously diverse is beginning to be generally understood. Even in adjoining states, with similar forest conditions and problems, forestry set-ups often have little in common with each other. In the past, regional rivalries, sectional prejudices, personal policies, selfish motives, autocratic decisions, partisan politics, professional jealousies, the desire to be different, the changing attitude of the public, and the fluctuation of the treasury have been strong factors in fashioning the administrative pattern of state forestry. On the whole, the composite picture of state forest administration in the United States

presents an extremely diversified and irregular pattern, somewhat similar to an old-fashioned quilt.

This extreme diversity in state forestry set-ups does not in itself prove that all is wrong with them. While there is plenty of evidence of serious weaknesses, not only in their structural pattern but also in their mode of operation, here and there one can find positive evidence of the operation of sound and enduring principles of public administration. It is true that some administrative set-ups grew up like Topsy, others were pushed continuously from pillar to post, while most of them developed as best they could on a trial-and-error basis. Under such uncertain conditions of development, one should not expect anything other than an extremely diverse and entangled administrative situation in state forestry. That such an entangled situation does exist is becoming more generally known, and in this growing awareness of existing conditions lies the hope that something will be done to improve the situation. A review of the development of state forest administration during the past fifty years shows that frequent and often drastic changes took place. That many of these changes resulted in betterment is now evident, but it is also true that other changes did little more than exaggerate existing weaknesses.

A number of significant administrative changes in state forestry were made during the past year, and it is the purpose of this report to review briefly some of these recent changes. In Rhode Island, where a Commissioner of Forestry was appointed as early as 1906, and forestry has been handled as a bureau in the Department of Agriculture since 1927, a Department of Agriculture and Conservation was created early in 1935, with four major divisions, namely: (1) Forests, Parks, and Parkways, (2) Fish and Game, (3) Animal Industry and Milk Control, and (4) Plant Diseases and Dangerous In-

sects. The administration of the whole Department of Agriculture and Conservation is placed in charge of a director. The head of the Division of Forests, Parks, and Parkways serves both as State Forester and Superintendent of Parks. It is planned to place the forestry section of this division in charge of an associate forester, whose duty it will be to supervise fire wardens, tree wardens, state forest operations, and forest investigations. Some time after the creation of this new department, the newly appointed director stated that "the office of superintendent of the forestry section will eventually be filled by a technically trained forester. The administrative authority by law is reposed in the chief of the Division of Forests, Parks, and Parkways and not in the head of the forestry section." Under this new set-up, Rhode Island has the distinction of being the only state with a Department of Agriculture and Conservation. At first one may question the advisability of combining agriculture and conservation, for the general trend of administrative organization for some time has been away from, rather than towards, the grouping of these two important state activities, but when one realizes that the total forest area of Rhode Island is less than 300,000 acres, the merits of this set-up become more apparent. Time may prove it to be workable and in the best interest of efficiency and economy.

In Vermont, where forestry has been under agriculture for most of the time since 1904, when one member of the Board of Agriculture was designated to serve as Forestry Commissioner, a reorganization was effected early in 1935 by the establishment of a Department of Conservation and Development which shall be administered by a state Board of Conservation and Development consisting of three persons appointed by the governor with the advice and consent of the state senate. The new law stipulates that

within the department there shall be: (1) a Forest Service, (2) a Fish and Game Service, and (3) a Publicity Service. The governor is empowered to designate biennially a member of the board who will serve as chairman. The board, with the approval of the governor, appoints the State Forester, the Director of Fish and Game, and the Publicity Director, each of whom hold office for six years unless removed sooner by the board, with the consent and approval of the governor. The State Forester, formerly called Commissioner of Forestry, by virtue of his office also serves as State Geologist, and has in charge of the State Parks. The new law stipulates that the State Forester shall be "a graduate of a forestry college with at least five years' experience." This five-year experience requirement is the longest period of experience qualification written into any state forestry law. It is significant that the law makes no provision for a director or commissioner to head the consolidated department, apparently leaving this responsibility to the three members of the board, who shall serve without compensation but may receive necessary expenses incurred in the performance of their official duties.

In Iowa, the secretary of the state horticultural society was designated to act as Forestry Commissioner as early as 1900. Since then forestry has developed rather slowly and irregularly. During most of this period the Secretary of Agriculture usually designated a forester on the staff of the forestry department of the State College to serve as Deputy State Forester. There was no active forestry work handled through the Department of Agriculture, for no appropriations were made for forestry work. In line with the present trend to consolidate forestry with other conservation activities, Iowa early in 1935 abolished the state Board of Conservation, the state Fish and Game Commission, and the office of state Forestry Commissioner.

and created a new administrative agency called the "State Conservation Commission," made up of seven citizens of the state interested in and having a substantial knowledge of conservation. The commission is empowered to employ an administrative head known as "State Conservation Director," who is responsible to the commission for the execution of its policies. The only qualifications for the director set forth in the law is that he shall be a person of executive ability and possess special knowledge relative to the duties imposed on the conservation commission. The new law also stipulates that the Department of Conservation shall consist of three divisions, namely: (1) Administration, (2) Fish and Game, and (3) Lands and Waters. The latter division is to include matters relating to state forests, state parks, forests and forestry, and lakes and streams, including matters relating to scenic, scientific, historical, archeological, and recreational matters. The new law also empowers the director of the department, with the consent of the commission, to employ necessary assistants, including a professionally trained state forester of recognized standing. Professor G. B. MacDonald, in charge of the Forestry Department of Iowa State College, was recently named State Forester.

Perhaps in no respect is the new Iowa conservation law more specific than in the safeguards it has erected against politics. Among other rigid conditions it requires that not more than four of the seven members of the board, when appointed, can belong to the same political party, and no member during his period of service on the commission can hold any other state or federal office. It is also written into the law that "no member, officer, or employee of the commission shall, directly or indirectly, exert his influence to induce any other officers or employees of the state to adopt his political views, or to favor any particular

candidate for office, nor shall such members, officers, or employees contribute in any manner, directly or indirectly, any money or other things of value to any person, organization, or committee for political campaign or election purposes. Any person violating this section shall be removed from office or position." This new law also makes a creditable attempt to introduce the merit system, for it stipulates that "no person shall be appointed as a state conservation officer until he has satisfactorily passed a competitive examination, held under such rules as the commission may adopt, and other qualifications being equal, only those of highest rank in the examinations shall be appointed."

Oregon is this year celebrating the twenty-fifth anniversary of the establishment of its state Board of Forestry in 1911. The membership of the board, which has remained unchanged for twenty-five years, was recently increased from seven to eight members, by the addition of a member to be appointed by the governor on the recommendation of the Western Pine Association. The original seven members consisted of the governor, the head of the forest school at Oregon State College, and one member each representing the Oregon State Grange, the Oregon Forest Fire Association, the West Coast Lumberman's Association, the Oregon Woolgrower's Association, and the U. S. Forest Service. A recent administrative change in Oregon is the appointment of a new State Forester in the person of J. W. Ferguson, who was connected with the state Board of Forestry for the past twenty-five years. He succeeded Lynn F. Cronmiller, who served as Deputy State Forester from 1924 to 1930, and since then as State Forester. Mr. Cronmiller remains with the Department, having been placed in charge of extension work, publicity, land acquisition, and similar activities.

The California legislature at its last

session authorized the Director of the Department of Natural Resources to receive, hold, and acquire land for future development for forestry purposes, and to manage these lands and dispose of products derived from them.

During the past year significant administrative changes have also taken place in a number of states in the general field of forest recreation. In New Hampshire, where the state Forestry Commission of three members has remained unchanged since 1909, the name of this commission was changed to "State Forestry and Recreation Commission." In Florida a law was passed authorizing the state Board of Forestry (created in 1927) to establish a department of State Parks to be known as the "Florida Park Service." At a recent meeting of the board it was decided that forestry and park matters will be handled through one administrative head. By this action the Director of the Florida Park Service was made responsible to the State Forester, who now serves as administrative head of both forest and park services. The development of this set-up is worthy of close study for the purpose of determining how effectively forest and park organizations and activities can be coordinated.

Within the past year Massachusetts corrected an illogical and rather unhappy administrative situation by transferring the Division of Animal Industry from the Department of Conservation to the Department of Agriculture, where it rightfully belongs. One naturally wonders why a line of work so foreign to conservation as is animal industry (concerned chiefly with bovine tuberculosis, cattle quarantine, contagious abortion, hog cholera, and the control of rabies in dogs, cats, rabbits, goats, squirrels, and monkeys) should ever have been placed in the Department of Conservation. The answer is found in an intense squabble between a former head of the state Health

Department and a former head of the state Department of Agriculture, both of whom wanted the Division of Animal Industry in their departments at the time of the general reorganization of the state government in 1919. It is reported that the struggle persisted for months, and when it became apparent that no sensible solution could be reached, it was decided as a practical compromise measure to place the division for temporary safekeeping in the Department of Conservation where it has remained and functioned in a quasi-independent way for more than fifteen years. This experience shows how long it may take to correct an error in administrative organization, and emphasizes the need for deliberate and purposeful action in the handling of administrative matters.

That other states are in urgent need of corrective legislation becomes apparent soon as one begins to make a comparative study of their administrative set-up for forestry. As a rather typical example one may consider the situation that exists at present in regard to state forest boards and commissions. Only nine of the forty-two states with forestry set-ups are operating now without boards or commissions. Perhaps in no phase of their forest administration is there greater diversity than in the make-up of these boards and commissions and in the qualifications, methods of appointment, term of office, rights, duties and responsibilities, and compensation of their members. To begin with about half of them are called "boards" and the other half "commissions." New Hampshire has a "Forest Commission," Alabama a "state Commission of Forestry," Mississippi a "state Forestry Commission," and Pennsylvania a "state Forest Commission," Florida a "state Board of Forestry," Washington a "state Forest Board," Maryland an "Advisory Board of Forestry," Tennessee an "Advisory Board of Forest Conservation," and Louisiana

General Forestry Governing Board." These boards and commissions differ widely not only in their names but also in the number of members, which ranges from three in New Hampshire and Vermont to twelve in Idaho and North Carolina. The commonest number of members is five or seven. The term of office of members may be indeterminate or for a fixed number of years, ranging from two in Maryland to eight in Delaware, the commonest term being six years. The present trend appears to be toward a six-year term with a staggered tenure, under which two members are appointed every two years. This plan is rapidly gaining approval, for it promotes a continuity of policy and assures a permanency of service. Some states, however, still place the full appointive powers of members in the hands of the governor, and sometimes their term of office runs concurrently with that of the governor, who in a number of states serves as chairman of the board or commission.

The qualifications of board or commission members written in the laws are conspicuously diverse. In a few states the laws set forth no special qualification. All that one finds in the forestry laws of New Hampshire is that "there shall be a Forestry Commission of three members, appointed by the governor with the advice of the council for a term of three years." In Vermont the law reads that "the Board of Conservation and Development shall consist of three persons appointed by the governor with the advice and consent of the senate." In most states, the laws creating forestry boards or commissions contain some form of qualifications for members. In some the qualifications are very general, such as "citizen," "suitable citizen," "qualified electors," "land owners," "persons with interest in forestry," "persons with interest in and knowledge of forestry," or "persons with ability in and fitness to

deal with forestry." In other states the qualifications contained in the laws are extremely specific, giving the governor very little appointive latitude.

In Delaware the state Forestry Commission consists of the governor and four suitable citizens, no more than two of whom belong to the same political party. In Mississippi the state Forestry Commission shall consist of the governor, the commissioner of agriculture, the state land commissioner, and six citizens of the state who are owners of real estate and qualified electors of the state. All appointees shall be selected with reference to their knowledge of and interest in continuous production of forests and the use of forest products. In South Carolina, the state Commission of Forestry consists of five members appointed by the governor. Two of the members shall be practical lumbermen, one a farmer who is a land owner, one to be selected from the public at large, and the President of Clemson Agricultural College. In Louisiana the membership of the general Forestry Governing Board consists of the Commissioner of Conservation (chairman), two well known timber owners, one farm-land owner with interest in farm-land reforestation, one member of the Louisiana State Park Association, and the professor of forestry in Louisiana State University.

In Wisconsin three of the six members of the Conservation Commission shall come from the territory north of and three from the territory south of a line running east and west through the south limits of the city of Stevens Point. The Michigan law specifies that two of the seven members of the Conservation Commission must reside in the Upper Peninsula.

In California the state Board of Forestry consists of seven members appointed by and holding office at the pleasure of the governor. Of the seven members

one shall be familiar with the pine timber industry, one with the redwood industry, one with the livestock industry, one with general agriculture, and one with the problems of water conservation.

In Idaho the members of the state Cooperative Board of Forestry consist of the governor, the attorney general, the secretary of state, the state auditor, the state superintendent of public instruction, the state land commissioner, the dean of the school of forestry of the University of Idaho, and four other citizens, one each to be appointed upon the recommendation of (1) the Timber Protective Associations of Northern Idaho, (2) the Timber Protective Association of Southern Idaho, (3) the joint recommendation of the Idaho Wool Growers' Association and the Idaho Cattle and Horse Growers' Association, and (4) the U. S. Forest Service. The member from the U. S. Forest Service serves in an advisory capacity and has no vote.

In Oklahoma the law requires that one of the members of the Forest Commission is to be chosen by the governor from a list of not more than five names submitted by the executive board of the state Federation of Women's Clubs. In Connecticut the forester of the agricultural experiment station is an ex-officio member of the state Park and Forest Commission. At present Connecticut has the distinction of being the only state that has two active professionally trained foresters on its commission.

With respect to rights, powers, and duties these forestry boards and commissions show an extremely wide variation. Some of them are purely advisory, others largely advisory, many semi-administrative, and a few fully administrative. In some cases these boards and commissions are little more than ornamental annexes or public relations agencies of the main operative forestry unit, while in other cases they serve regularly and efficiently with full administrative authority.

The conditions of compensation and expenses of the members of these boards and commissions are extremely interesting. They range all the way from no compensation and no expenses to definitely per diem rates for services. The law of Idaho states that the members of the state Cooperative Board of Forestry shall be allowed no expenses or compensation for their services thereon. The members of the state Forestry Commission of Arkansas serve without compensation, and under their own ruling are not reimbursed for actual expenses incurred while carrying out their duties. By far the commonest practice is for the members to serve without compensation but to be reimbursed for legitimate expenses incurred in the performance of their official duties. It is, however, amazing to find so wide a range of phraseology used in the different laws covering the reimbursement for expenses. Among the terms used are:

"expenses incurred in the performance of duties" (Washington),

"actual expenses incurred in the discharge of duties" (Alabama),

"actual expenses while in attendance upon meetings and while going to or from them" (South Carolina),

"actual traveling expenses incurred in attending board meetings" (Oregon),

"actual necessary expenses incurred in the performance of duties" (California),

"actual and necessary traveling and other expenses" (Minnesota),

"actual and necessary traveling expenses and subsistence while away from home at meetings or in the discharge of duties" (Wisconsin),

"reasonable expenses actually incurred in the performance of duties" (Delaware), and

"legitimate expenses incurred in the performance of duties" (New Hampshire).

The Florida law sets a maximum annual limit for expenses of Board of Forestry members. It reads: "Members may

receive no compensation, but may receive up to \$300 each for actual expenses necessarily incurred in the discharge of their duties." Three states—North Carolina, Iowa, and Virginia—are more liberal concerning compensation and expenses of board and commission members than the other states. The North Carolina law reads that "members of the board may receive not more than \$4 per diem and actual expenses while in attendance at board meetings." In Iowa each member of the Conservation Commission "shall receive the sum of seven dollars and fifty cents for each day actually and necessarily employed on official duties, provided said compensation shall not exceed \$500 for each fiscal year. Also members of commission shall be reimbursed for all actual and necessary expenses incurred in the discharge of their official duties when absent from their usual place of abode." In Virginia the chairman of the Commission of Conservation and Development receives an annual salary of \$6,000. The other four members receive no salary but are paid their necessary travelling and other expenses incurred in attendance upon meetings or while engaged in the discharge of their duties, "and the sum of \$10 per day or portion thereof in which they are engaged in the performance of their duties." One cannot help but wonder why this wide range of compensation and varied terminology. It is time to appreciate that administrative conveniences and expediences of today may become the administrative embarrassment and handicap of tomorrow. Our state forestry laws are clogged with insignificant, irrelevant, and obsolete administrative detail. In the long run, excessive details written into state forestry law hinder rather than help effective administration.

Strikingly variable also are the titles

and qualifications in the different states for the highest ranking forest officers. In more than thirty states the prevailing title now is State Forester. Other titles used are Chief Forester (West Virginia), Supervisor of Forestry (Washington), Superintendent of State Forests (Wisconsin), Director of Forestry and Fire Prevention (Minnesota), Director of Lands and Forests (New York), and Commissioner of Forestry (Maine). Formerly, the title Commissioner of Forestry was more widely used, but gradually it was given up, being dropped by Rhode Island and Vermont during the past year; and now Maine alone retains it.

Even more variable than the title are the qualifications of State Foresters. In about one-third of the states that now have State Foresters nothing pertaining to their qualifications is written into the law, while in the remaining states qualifications ranging all the way from very general to extremely detailed requirements are written into the laws. The extent of these variations is set forth in the following excerpts¹ from existing laws:

"The State Forester shall be qualified by training and experience to perform the duties of his office" (Massachusetts).

"The state Cooperative Board of Forestry shall select and nominate for appointment by the state Board of Land Commissioners a State Forester experienced in forestry and forest protection, who shall function in the office of and under the supervision of the state Land Commissioner" (Idaho).

"The State Forester shall be chosen solely for fitness for the position, professional or practical, as the nature of the position shall demand, irrespective of political beliefs or affiliations, which fitness may be determined by examination or otherwise." (Indiana).

"The state Board of Forestry shall ap-

¹Not always in the precise form of the original; the quotations are to some extent condensed or rearranged.

point a State Forester who shall be a practical forester familiar with western conditions and experienced in organization for the prevention of forest fires" (Oregon).

"The governor, by and with the consent of the senate, shall appoint a State Forester to have general charge of all the State Forests, who shall be an elector of the state, trained and experienced in forestry" (Montana).

"The Division of Forestry shall be administered through a chief of division who shall be known as State Forester, who shall be a technically trained forester" (California).

"The State Forester shall be a technically trained forester with administrative experience in forestry" (Arkansas).

"The State Forester shall be a technically trained forester and shall have both a practical and theoretical knowledge of forestry" (Virginia).

"The Commissioner of Agriculture, Labor, and Statistics shall appoint with the consent of the governor, for a period of four years, a technically trained forester who is a graduate of a forest school and who shall have both a practical and theoretical knowledge of forestry" (Kentucky).

In the Fulmer law enacted by Congress in 1935 is found the following provision: "In order to insure a stable and efficient organization for the development and administration of the lands acquired under this act, the state shall provide for the employment of a State Forester who shall be a trained forester of recognized standing."

In 1914 Maryland enacted a law authorizing the Regents of the University of Maryland to appoint a State Forester "who shall be a technically trained forester of not less than two years' experience in professional forestry work." Since then Texas, Louisiana, Connecticut, Tennessee, Alabama, Georgia, Delaware,

Florida, and South Carolina, in all nine other states, have adopted verbatim or with only a slight modification of meaning this extremely short period of experience requirement. Among these states Florida requires that the two years of experience be in "practical and administrative work," while South Carolina holds out for at least two years of experience in "technical and practical and administrative work." Vermont broke away from this contagious requirement early in 1933 when a law was passed requiring that "the State Forester shall be a graduate of a forestry college with at least five years' experience." These two-year provisions, and even the five-year provision stand in strong contrast with general requirements for Regional Forester of the U. S. Forest Service, published several years ago, in which the minimum qualifications included "at least fifteen years actual experience in the management of forest land." A personnel study made several years ago by the U. S. Forest Service shows that the average period elapsing between the first appointment and the appointment of Regional Forester was 15¼ years, Assistant Regional Forester almost 12 years, and Forest Supervisor 8¼ years.

These extremely short training and experience requirements for State Foresters are typical of many other obsolete and inoperative provisions in state forestry laws. It is equally true that many of the overhead administrative set-ups for state forestry and their subordinate internal structures and field organizations are just as completely outmoded. But what to do and when to act to correct this situation are questions that deserve thoughtful consideration. Change of administrative set-ups simply for the sake of change, irrespective of whether they be in forestry or any other similar public, semi-public, or private enterprise, is nothing short of quack doctoring. Based

On a preliminary general survey of the whole field of state forest administration in this country, your Committee feels that there is no need for any immediate drastic actions to correct existing ailments and weaknesses. The Committee also feels that the approach to this important problem is not through additional experimentation, for we have had more than thirty years of it already, but rather through a carefully planned and thorough study of the whole situation of state forest administration. During the past two years a start has been made in this direction. Mimeographed copies of a preliminary classification of the overhead administrative set-ups for forestry in the forty-two states that now carry on forestry work are available here for your consideration. You will note that this general classification groups all the states under one of our major headings, namely:

- I. States with no administrative set-ups for forestry.
- II. States in which forestry is subordinate to other major state functions.
- III. States in which forestry is handled as a separate departmental function.
- IV. States in which forestry is combined with other major administrative functions.

Time is not available for a discussion of this general classification. It does, however, contain many astonishing details that merit special consideration. Additional studies have been started concerning special phases of the overhead administrative set-ups, the internal organization of central, regional, and local offices, and the organization and operation of field activities. Among the many subjects that merit special consideration are the management of personnel, the acquisition and use of property and supplies, and the procurement, use, and disposition of funds. All three of these are important subjects for study, but the latter is unquestionably the least understood, in spite of its vital importance.

One of the most important administrative problems in the whole field of state forestry today is the working out of sound and enduring methods of providing sustained fiscal support for forestry. Among the attempts to meet these general and special fiscal requirements a number of states have established special funds. Among them are "Forest Reserve Fund" (Maryland), "State Forestry Fund" (Delaware and Indiana), "Forest Protection Fund" (Idaho), "Forestry Cooperative Fund" (Rhode Island), "State Forest Land Fund" (Virginia), "State Forester's Emergency Fund" (Oregon). Connecticut now has three funds, namely, "Forest Fire Fund," "Forestry Fund," and "Conservation Fund." Iowa also has three funds under its Conservation Commission, namely, "State Fish and Game Protection Fund," "State Conservation Fund," and "Administration Fund." Perhaps in no phase of state forest administration are conditions more undeveloped and unstable than in its fiscal set-ups. This offers an exceptionally interesting and practical field for further study.

A natural outgrowth of a series of studies in state forest administration will be the development of fundamental principles and reasoned standards. Fundamental principles do not mean old principles or new ones, or conservative principles any more than radical principles, but rather enduring principles that take into account the lessons and experiences of the past and at the same time are alive to the enlarging needs and problems of the present and our obligations of the future.

In the development of standards for state forest administration, we must ever be on guard so as not to make the grievous error of attempting to conceive a single standard that uniformly is applicable to all states; for there is no single ideal state forestry organization. It is, therefore, recommended by the Committee that a number of standards or models of

state forest administration be developed to cover the wide range of forest conditions and problems in the different states. The Committee is willing to attempt to do this if continued.

In conclusion, the Committee wishes to remind the members of our Society that forest administration by its very nature is forward-facing, and also call attention to the great progress made in the past few years in the general field of public administration, of which state forest administration is an essential part, and the comprehensive plans now being formulated for the future development of public administration. With a recent gift of \$3,000,000 to the Graduate School of Public Administration of Harvard University, and greatly enlarged educational and research programs in public affairs at California, Chicago, Princeton, Syracuse, and no less than thirty other universities and colleges, the rapidly growing importance of public administration is no longer a question. With forestry in this country becoming more and more

a matter of public administration, it is important that all foresters, but especially those concerned with administrative matters, acquire an adequate working knowledge of sound practices and enduring principles in public administration. Upon the attainment of this objective and a more thorough general understanding of the organization, structural patterns and modes of operation of existing state forestry departments, boards, and commissions, it will be safe to move forward with a purposeful plan of improving their administrative set-ups. Your Committee, if continued, solicits the wholehearted cooperation of the members of the Society in developing this important administrative study, the results of which are urgently needed to develop the whole program of state forestry on a sound basis.

F. W. BESLEY,
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HENRY SCHMITZ,
JOSEPH S. ILLICK,
Chairman.

REPORTS OF DIVISION OF FOREST EDUCATION COMMITTEES

SCHOOLS OF FOREST PRACTICE

THE Committee, appointed at the meeting of the Division of Forest Education on January 28, 1935, was for the purpose of developing Schools of Forest Practice in cooperation with division administrative agencies under the Lumber Code. Inasmuch as the Code was ended by Supreme Court decision in May and the N.R.A. has been terminated by the President's executive order, effective January 1, 1936, there is no prospect of developing forest schools within the intended framework of the Conservation Code.

The Committee by correspondence developed some valuable suggestions, which will be kept on file in the hope that at some future time it may be possible to carry out the projected schools. This, however, is conditioned upon develop-

ments similar to the defunct Conservation Code, and no useful purpose would be served in elaborating the subject at this time.

It is therefore recommended that the Committee be discharged.

Respectfully submitted,

For the Society of American Foresters

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SPECIALIZED CURRICULA AND BASIC TRAINING IN PROFESSIONAL FORESTRY

THE problem of specialized curricula versus basic training in professional forestry involves several questions. The first requires the definition of the profession of forestry itself. European nations long ago settled this question. As a universally recognized profession, forestry demands as its basis a thorough biological knowledge of the forest as a living organism dependent on environmental conditions of soil, climate, and topography, and the ability to interpret and control the biological factors which will determine in advance, for a rotation, the resultant growth of the forest crops. This is the technical basis. In the second place, the profession demands an intelligent understanding of both the economic

and technical factors dealing with the utilization of forest products. Thirdly, it requires a grasp of the business, administrative, and financial principles applicable to the successful management of areas of forest land. In the fourth place, foresters must understand and intelligently apply the social principles which affect the welfare of communities and the state.

In no other profession are the demands on basic training so broad or of such comprehensive character as in forestry. No other profession depends to such an extent for the success of its members on a practical grasp of each and all of these four great divisions of human thought and activity. It follows that properly trained foresters almost universally make better

statesmen and administrators than members of any other profession.

It does *not* follow that all foresters possess this broad training, or could use it if they had it. Specialization in silviculture to the neglect of economics brought German foresters into disrepute in the state economy, but exalted the position of the forest land owner, who through necessity *had* to know the essential facts regarding technique of production, economics of marketing, finances and administration, and finally the welfare of the dependent population.

In America, the profession is just emerging as such, and while the recognition of this fourfold need is increasing, yet the tendency still is to exalt the specialist and his services and lay insufficient emphasis on the general basis on which such specialization should rest. This is not peculiar to forestry. Engineering only recently has been aroused to the need of a broader outlook than is obtained by concentration on the purely mathematical requirements of their profession. Law and medicine in the accepted schools demand a four-year undergraduate course as preparation for their fields. Yet these professions are far less exacting than forestry, law being for the most part confined to the social field, medicine to technique and social aspects, and engineering to technique.

Criticism of forestry education runs for the most part towards demanding more of the humanities in the undergraduate course, such as history and English, and a greater expansion of economics. Foresters graduated from many schools are criticised by their employers as lacking in adaptability and imagination or initiative, and the power to assume responsibility. At the same time and in equal volume, they are criticised for inaccuracy and inability to do essential things of a vocational character. These criticisms cut both ways, but such viewpoint emphasizes

the fact that the basic problem is how to give a forester adequate professional training in four years of undergraduate instruction. Needless to say, no European institution attempts to do this except for ranger or vocational grades.

About half the time of the Society's educational study was spent in an attempt to find out exactly what amount of time was given to all subjects taught in the four-year undergraduate courses offered to foresters in twenty-one institutions, including all curricula thus offered, whether general or specialized. The Council in the present by-law 5 has the power to approve not merely the school, but the curricula offered as to whether they cover the basic requirements for Junior membership.

No effort has as yet been made to obtain from the Council approval of specialized curricula offered by such institutions. The consideration of this matter was postponed until it could be presented to the Division of Forest Education and their recommendations received. At present therefore, a graduate taking any of these specialized curricula will be accepted if the school itself has been accepted.

The Professional Forestry Schools Report, now available, contains the results of the analysis of curricula, both general and specialized, as given in 1934-35. Band diagrams show the subjects by semester hours given in five groups, namely, silviculture, management, utilization, protection, and economics. An arbitrary classification of technical forestry subjects was made for this purpose, and separated from basic or nontechnical subjects. For instance, surveying was classed as non-forestry, while dendrology was included as a forestry subject. The final averages were for eighteen schools, excluding Connecticut, New Hampshire, and Washington State College.

The summary obtained in terms of semester credit hours, including unclassified electives, is shown in Table 1.

TABLE 1

ANALYSIS OF THE TECHNICAL FORESTRY CURRICULA OF 18 FOREST SCHOOLS, 1934-35

	Weight in semester credit hours	Percentage of total curriculum	Percentage of technical forestry and conservation
Fundamental courses.....	62.50	46.38	
Forestry, technical	58.58	43.46	95.68
Conservation, land management.....	2.65	1.97	4.32
Electives permitted.....	11.05	8.19	
Total required for graduation.....	134.78	100.00	
Credits given for summer field work	5.15	3.82	
Total exclusive of summer field work	129.63		
Average per semester.....	16.20		
Taught by other faculties.....	73.26	54.36	
Taught by forestry faculties.....	61.52	45.64	
Average taught per member forestry faculty ¹	9.59		

¹Average forestry faculty membership 6.27.

It thus appears that the student capacity for four years is practically limited to 16 hours per semester, or 128 in all, exclusive of extra summer terms, which add an average of 5.15 credit hours, or more nearly 8 for those schools which give this extra field work. Out of this total, *including* the extra time, the required basic or nonforestry subjects total 72.5 hours or practically one-half, or a full equivalent of two years of college work, while the technical forestry, plus a small average of 2.65 hours in other branches such as game, grazing, etc., total 11.23 hours, or within about 2.5 hours of a 2-year load (5 hours of which is summer work), leaving 11 hours for unassigned electives, the percentages being respectively 46.38, 45.43, and 8.19.

Of the basic or nonforestry subjects, 27.62 hours, or 20.49 per cent, are devoted to English, mathematics, physics, and chemistry almost exclusively, omitting military drill, health, etc. This is within 4.5 hours of one year's work. Surveying and mapping takes 9.9 hours. General sciences, including geology, soils, botany, and plant physiology, and pathology, zoology, and entomology, require 18.93 hours. The economics group gets along with 5.8 hours, inclusive of his-

tory and of accounting or business administration. The total of 34.88 hours exceeds one year's work by 3 hours. The 1.5 hours left of the two years hardly provide for deficiencies in the economics field. This may in part be made up by the 6.75 hours of electives left for the last two years.

In technical forestry (and this analysis is confined to curricula in general or technical forestry, and does not include specialized curricula), we find the distribution of time shown in Table 2.

When boiled down by omitting the introductory courses in general forestry and the seminar courses, it appears that, as classified, silviculture and protection, or the technical group of forest production, embrace 39.83 per cent of the average course; economics and utilization together, 31.36 per cent; management and administration, 29.01 per cent; and the social features or aspect is not differentiated, but if given, seeps through in economics or management.

It has not yet been successfully demonstrated how the requisite basic principles needed in the rough training of professional foresters can be given in less time than the average, for silviculture, of 16.04 hours; protection, 5.62 hours; economics,

TABLE 2

ANALYSIS OF THE TECHNICAL FORESTRY CURRICULA, 18 FOREST SCHOOLS, 1934-35

	Weight in semester credit hours	Percentage of total curriculum	Percentage of technical forestry and conservation	Distribution of the five technical groups of forestry by percentages
Forestry, technical				
1. General forestry	2.21	1.64	3.61	
2. Forest economics	5.69	4.22	9.29	10.46
3. Forest management	15.78	11.71	25.77	29.01
4. Silviculture	16.04	11.91	26.20	29.50
5. Protection	5.62	4.16	9.18	10.33
6. Utilization	11.26	8.35	18.39	20.70
Research	.22	.16	.36	
Seminar or review courses, technical	1.37	1.02	2.24	
Other electives	.39	.29	.64	
Total technical forestry	58.58	43.46	95.68	

5.69 hours; management, 15.78 hours; and utilization, 11.48 hours, or a total of 54.61 hours, which is about $3\frac{1}{2}$ semesters, though these proportions may vary elastically with different institutions.

As a result, the attempt to spread the course to include specialization in utilization, in game management, grazing, or recreation, or even in shade trees, on the one hand, results immediately in vital curtailment of basic training in the four major fields of professional forestry. On the other hand, an enlargement of the training in the humanities, or in such subjects as engineering, accounting, and business law or administration, results in the same curtailment of these basic fields.

This problem has been met in one of two ways. One school, California, adheres to a schedule by which the completion of an adequate professional training in forestry requires a fifth year; while postgraduate training is given and encouraged at Idaho, Iowa, University of Michigan, Minnesota, Montana, New York State College, and the University of Washington, without definite effort to require the fifth year for professional competence. About 5 per cent of all graduates take postgraduate or fifth year training. Thus the basis of the profession still rests firmly on the theory of a course

equivalent to but 2 years of general subjects and 2 years of forestry.

As this period, 2 years, does not permit of the acquisition of special knowledge in the extensive field of utilization, certain institutions such as the University of Michigan, the New York State College of Forestry, and others have abandoned the attempt to cover professionally the fields of economics other than utilization, of silviculture and protection, and of management, and have set up curricula which frankly concentrate on technical utilization. At the University of Michigan, and in certain courses at the New York State College of Forestry and elsewhere, these other fields of forestry are not wholly jettisoned, but certain courses in silviculture or management are required, to give the specialist a forestry viewpoint.

This same procedure has been adopted for the same reasons, in such fields as game management and grazing, illustrated at Utah and Washington State College, and at Connecticut State College and elsewhere, with the same results. These three colleges, in fact, were refused listing by the Society owing to inadequate professional instruction in forestry.

The arguments in favor of these special courses are sound, if it is granted that

men so prepared are frankly specialists without the general educational basis of a professional forester, and must acquire these special techniques in a 4-year course. A counter-argument would be that the general course in technical forestry is also a "special" course in forest management, intended for practicing foresters. This is for the Society to decide. The specialist in such fields as utilization, game, recreation, grazing, or shade trees, if he has a grounding in the four fields of forestry, namely, biological, economic, financial, and social, will be a better specialist and also remain a professional forester. If his ground-work is inadequate both in the basic fields of forestry and also in his general education, he remains a narrow technician, well prepared in his own field, but hardly qualified as a general or professional forester. His place, it seems to me, in the Society is as an Associate member rather than as a Junior or Senior member of the profession.

A proper solution of this question is made the more imperative by the increasing pressure brought upon the faculties of schools of forestry to expand their instruction in game management, recrea-

tion, and other fields dealing with the increasingly popular uses of forests for such purposes. Shall the profession permit its standards to be diluted by the *substitution* (not the addition) of such instruction, important and necessary though it is, or rather should we not insist on adherence to a sound structure of education, which will enable its members to correlate all such utilities, with a firm grasp, in the basic plan of forest management, in which the production and control of forest crops remains the foundation and cornerstone of the entire edifice?

In Table 3 following, an analysis of the average curriculum in technical forestry is shown, as given in eighteen undergraduate institutions. All courses are reduced to semester credit hours. In column 2 the average credits are shown for those schools which teach a subject. In column 3 the average is given for all the 18 schools, including those not teaching it. Specialized curricula, such as wood technology or wildlife, are not shown. The comparative curricula for all subjects are shown in the Professional Forestry Schools Report, published by the Society in January, 1936, which can be obtained from the Executive Secretary, Washington, D. C. (\$1.50).

TABLE 3

AVERAGE CURRICULUM IN TECHNICAL FORESTRY
REQUIRED SUBJECTS BY SEMESTER CREDIT-HOURS
BASIS 18 SCHOOLS¹

Curriculum:	Number of schools teaching subject	Average hours taught per school	Weight in total for 18 schools
A. Fundamental Subjects.			
1. Basic Subjects			
English	18	8.76	8.76
Mathematics	18	6.67	6.42
Statistical Methods	(5) ²	(3.26) ²	(.91) ²
Physics	15	5.35	4.46
Chemistry	17	8.16	7.70
Typewriting	1	2.00	.11
Education	1	3.00	.17
Health, military, etc.	15	(5.93) ³	(4.94) ³
Total			27.62

Curriculum:	Number of schools teaching subject	Average hours taught per school	Weight in total for 18 schools
2. General Sciences			
History	2	4.5	.25
Psychology	1	2.5	.14
Sociology	1	2.5	.14
Economics	18	4.83	4.83
Accounting	3	2.67	.44
Business law	—	—	—
Surveying	18	7.43 ⁴	7.43
Drawing, mapping	17	2.61 ⁴	2.47
Geology and related subjects	12	3.75	2.50
Soils	11	3.21	1.96
Biology	1	10.00	.55
Botany	17	8.08	7.63
Plant physiology	10	4.43	2.46
Plant pathology	1	3.50	.19
Zoology	9	4.11	2.05
Bacteriology	2	2.33	.26
Entomology	9	2.67	1.33
Manual Arts	1	.50	.03
Engineering	2	2.00	.22
Total			34.88
B. Forestry, Technical.			
1. General forestry, total	16	2.49	2.21
2. Forest economics			
Economics	9	2.76	1.38
History, policy, and laws	13	2.79	2.02
Finance	15	2.74	2.29
Total			5.69
3. Forest Management			
Mensuration	18	7.60	7.60
Organization and regulation, working plans	18	5.04	5.04
Administration	10	2.70	1.52
Improvements	11	2.38	1.45
Field, unclassified	2	1.50	.17
Total			15.78
4. Silviculture			
Forest soils	5	2.40	.67
Dendrology	18	4.46	4.46
Silvics and ecology of forest	18	3.03	3.03
Treatment of woodlands	18	5.33	5.33
Reforestation and nursery tech- nique	16	2.27	2.55
Total			16.04
5. Forest Protection			
Protection methods	16	2.27	2.01
Forest zoology	1	2.00	.11
Forest entomology	9	2.48	1.24
Forest mycology	1	3.00	.17
Forest pathology	13	2.90	2.09
Total			5.62
6. Forest Utilization			
Wood anatomy	—	—	.28
Wood identifications, properties, uses	17 ⁵	3.29	2.97
Logging	17 ⁵	3.09	2.92
Milling and manufacturing	9	2.37	1.18
Timber mechanics	—	—	—
Wood preservation	12	2.21	1.47
Seasoning of wood	—	—	—
Forest products	14	3.14	2.44
Pulp and paper	—	—	—
Lumber business	—	—	—
Total			11.26

Curriculum:	Number of schools teaching subject	Average hours taught per school	Weight in total for 18 schools
Conservation and land management related to forestry, general	1	3.00	.17
Range management and domestic stock	5	4.40	1.22
Wildlife management or fish and game	4	3.58	.80
Park and landscape management	3	2.11	.35
Recreational management	---	---	---
Arboriculture or shade trees and municipal forestry	1	2.00	.11
Total			2.65

¹Departments at Connecticut State College, University of New Hampshire, and Washington State College excluded.

²Included under mathematics.

³Not included in average.

⁴Surveying and drawing not fully segregated.

⁵All 18 schools teach this subject, but in California it is elective.

⁶Not taught at Purdue University.

H. H. CHAPMAN, *Chairman.*

SPECIALIZATION IN FOREST EDUCATION¹

THE Chairman of the Division of Education instructed the Committee to consider three principal questions:

1. What can forestry in its modern sense be legitimately regarded as covering?
2. What constitutes specialization?
3. When should specialization commence?

Each member of the Committee considered these, and submitted statements to the chairman of the Committee, from which he has freely drawn for purposes of this preliminary report.

Question 1.—One must turn at the outset to the meaning of forestry when the Society first came into being. It was concerned then with the scientific management of the forest to secure maximum production of useful materials continuously, and to assure the maintenance of the indirect benefits, such as control of streamflow.

That conception of forestry was the then basis of professional training. Graduates in forestry, however, were called upon to meet new requirements as they secured positions and pursued employment in these positions. Foresters had to be able to give care to individual trees and undertake duties as arboriculturists, to handle logging operations, to undertake the seasoning and preserving of wood, to market products and determine new uses of wood, to provide for recreational use of the forest, to combat insect infestation and fungus diseases, to manage areas with regard to wildlife and game, to classify land and determine its use, to acquire land and reforest it, to handle country estates, to look after grazing lands, to further forestry in trade associations and the various forestry associations, and so on. The original conception was like a cylinder which has now broadened into the shape of a funnel.

The modern broadened sense of forestry covers land and resource manage-

¹Preliminary report. Not resubmitted to committee members before presentation.

ment in the widest sense. Classified, it has been stated as broadly covering—

- I. Land management
- II. The growing of timber
- III. The conversion of the forest tree products.

The activities of a forester have brought him into a wide variety of interests connected with land management, such as recreation, wildlife including game, grazing, soil erosion, land classification, all phases of protection, and also considerations of economic land use.

The growing of timber has involved the forester in the basic factors, climatic, physiographic, and biotic influences, and the technique of silviculture. These and the philosophical phases are well covered in Graves' and Guise's book on Forest Education.

In the conversion, distribution, and use of forest products the forester is led over into the field of engineering in addition to intensive training in wood technology and chemical utilization. He has been called on and undertaken work in distribution of products.

Graves and Guise state: "In the long run successful forest land management hinges in large measure on the skillful manufacture and utilization of forest products. Forestry is therefore concerned not merely with silviculture, but with the diversified economic and industrial problems of forest utilization."

What, then, constitutes specialization in forest education?

Specialist is defined in the dictionary as "one who devotes himself to some special branch of learning, art, or business."

In that sense a forester is a specialist. However, that does not answer the question set up by the chairman of the Division. General professional forestry training started in the beginning with the concept of training men who would apply the acquired knowledge in management of the forest for purposes of providing wood

products and maintaining other useful benefits of the forest. It prepared men for the application of protection, silviculture, and utilization in the business of the forest.

Certain schools began later to focus on one or more aspects of this professional training. That is like the selection of a major by students in a college of liberal arts. The student must satisfy all the requirements of a liberal education, but concentrate during the latter half of his course on one subject, such as English, economics, or mathematics, so as not to diffuse his efforts. This is not specialization, but concentration on one phase. If the student wishes to apply these in a professional way, say as in teaching English in a college, he must specialize in English by graduate work and secure as a measure of his accomplishment an advanced degree.

Majors, as they are laid down in the curriculum for forest management in the New York State College of Forestry, are an exact counterpart of the concentrations in English, economics, etc., in an arts college. The focus may be on forest management, wildlife management, forest zoology, entomology, ecology, or pathology. Specialization, on the other hand, in any of these lines requires advanced study at the graduate level if the student really desires to be efficiently trained within the fields looking forward to research or to special employment in solution of forest problems, such as diseases, insect infestations, wildlife conservation and the like. It builds upon the groundwork of undergraduate training. Several of the schools have announced undergraduate majors, such as sales and distribution of products, arboriculture, etc.

Of a somewhat different character are the undergraduate curricula that have appeared which omitted several of the courses leading to forest management and have substituted others essential in training within the announced branch, depend-

ing on fundamental and associated courses, earlier or later in the course, to give the student reasonable acquaintance with management of the forest for wood production.

The School of Forestry and Conservation at the University of Michigan, and the New York State College of Forestry in a course of training to develop a student in wood technology, furnish examples of this set-up. For illustrations I will deal here only with the programs of the New York State College of Forestry.

To train students adequately in the field of forest products requires a definite curriculum. The freshman year is a common one to all students. They get botany, inorganic chemistry, drawing, English, and mathematics of the usual extent in hours, and a knowledge of the field of forestry in a two-hour course throughout the year, in which all the students meet one hour per week for general lectures and visual instruction, and one hour in small sections for intimate instruction.

In the second year the two divisions are distinct, although not completely divorced.

The products group receives the same English in composition, literature, and public speaking—but a longer course in physics, and the rest of the courses in lines essentially fundamental to their objective.

All students of this college attend the sophomore camp of ten weeks. There the products men receive further training in dendrology, some elementary silviculture to acquaint them with the handling of the forest, a good grounding in surveying and in forest mensuration, and travel to wood-using plants to study lay-out and operation.

In the junior and senior years forest-products students do not get any further courses in silviculture and in forest management unless elected, and there are relatively few hours reserved for electives.

The pulp and paper curriculum is still more divergent from forest production concepts after the sophomore year, and becomes a distinct program, especially in chemistry and the technique of pulp and paper manufacture.

Students majoring in landscape and recreational management have the same work during the first two years, and in the sophomore summer camp, as students in the forest management group. Thereafter their curriculum differs, following more particularly planning and design, structures, recreational uses and development, maintenance and administration of recreational forest areas. Provision, however, is made for instruction in silviculture. The course gives higher concentration on landscape engineering than is the case in the emphases of other majors in the curricula, stressing as it does the development of recreational forest areas and their management.

In several professions *undergraduate* training is given to prepare men for the practice of their profession, for example engineering. In some professions, such as law and medicine, instruction is at the *graduate* level. In engineering given in the undergraduate period the freshman year is common to all, and instruction is differentiated in the sophomore and subsequent years, but there is still an interlocking of instruction.

Those who go into electrical engineering receive considerable instruction in courses in civil engineering and in mechanical engineering. The differentiation into the professional societies is clearly made in engineering lines.

Writing concerning *what constitutes specialization*, a member of the committee holds that a man graduated from a school of forestry, who has followed a regular course of training designed to prepare him for the timber production field, or for wildlife management, or for timber engineering, or possibly for some other

department of effort, but who has taken no post-graduate work of any kind, could not be considered, on graduation, to have specialized. No discriminating employer would be likely to regard him as having done so, nor would anyone think of him as a specialist in the sense in which that term is ordinarily understood. Even if the graduate had found the time to get in an extra course or two in some specific subject before obtaining his degree, it does not alter his professional qualifications materially. The obtaining by the holder of a bachelor's or master's degree as a result of an additional year of study, during which the bulk of his attention has been given to some specific subject, such as silviculture, seems to be the minimum preparation which could possibly justify the claim that the graduate had specialized. Only doctorate standing, or its equivalent in professional experience and achievement, could really substantiate the claim that one has specialized.

Regarding *when shall specialization commence*, the opinion was that if a professional man is to be of maximum value to the community, he should by all means have a solid foundation of general professional knowledge before he attempts to focus his attention on one phase of his field. Specialization should not begin until the master's year at the earliest.

The view taken by one member of the committee is that an adequate undergraduate curriculum in forestry consists of four divisions of subject matter: (1) basic sciences, (2) technical forestry subjects, (3) restricted electives which the student may devote to cultural and broadening courses or to foundational courses in preparation for his specialized field, and (4) a few free electives so that the individual may develop his own worthy desires. The basic sciences are naturally the keystone of the curriculum. With adequate preparation in the basic sciences, the forestry student in his technical

training needs mainly to be taught how to use his previously acquired chemistry, botany, mathematics, geology, soils, etc. in the solution of forestry problems. The remainder of his course work can be devoted to restricted and free electives. These electives provide the very necessary element of flexibility. In spite of any number of different curricula that might be set up, there are always individuals with worthy objectives and desires who cannot be satisfied by any set curriculum, but who should be allowed to follow out these worthy desires.

Little progress can be made in considering the subject of specialization in forest education without first clearly setting forth the objective of forestry teaching. Forestry teaching is missing its mark if decade by decade progress is not being made in the condition of the forests of the nation. In other words, the objective of our teaching must be improvement in the silvicultural health of our forests.

It is true that through the years foresters in the United States have been charged with tasks other than those connected with the silvicultural health of our tree communities. Because some foresters have clearly seen that the growing of timber crops can continue only so long as timber is used widely, it is only natural that such foresters should have become interested in scientific studies of forest products in order to offset the inroads of wood substitutes. Important as such studies are to the life of the forestry profession, this does not mean that every scientific worker in this field is a forester any more so than that every specialist in human physiology and anatomy is a physician. On the other hand, because the largest employer of foresters in this country, the United States Forest Service, happens to have been charged with the management of large areas of non-agricultural land only a part of which is suited to growing tree crops, it is likewise logical that the public should look to

foresters to solve such problems of non-agricultural land management as erosion, range management, control of precipitation run-off, recreational management, and wildlife management. Again, important it is that these fields should continue to occupy the attention of foresters, if we should ever arrive at the point where we devote ourselves entirely to such fields and to the almost complete exclusion of other forestry, then our profession has lost distinctiveness, and it is doubtful whether we are justified in continuing to call ourselves "*foresters*."

If we accept the foregoing arguments, then we must accept the viewpoint that there is a central body of knowledge with which all *foresters*, even though employed in a specialized field, must be familiar if they are to be designated as such. Fortunately, this central body of knowledge is not so extensive as to prevent the individual, in his undergraduate university training, from getting at the same time a good foundation for his later specialized training, which normally would involve a year or more of graduate work.

Variation of opinion as shown in this preliminary report is intentionally introduced to stimulate suggestions to the committee for its help in continuance of the work. A further point of view of a member of the Committee is quoted for that reason.

"The fundamental training of the forester is something which I feel we never will quite satisfactorily determine. If we are to make the most progress, we must continuously be on the frontier in education. Those who charted the educational courses in forestry in the early history of our country were no more challenged by the demands of the frontier than are we. Certainly the fundamental training of the forester should be broad, but how broad depends upon so many circumstances that I am quite sure it is essentially difficult for us to mark the limits. The satisfactory production of for-

est trees suited to the needs of mankind call for an understanding of the forces of nature involved. If a forester is going to be interested in the manufacturing or transportation of timber products, probably he is not so much interested in the agencies concerned in the production of trees, but he certainly should have enough fundamental sciences to appreciate and understand the forces of nature which are involved.

Land management may call for a wide variety of activities, but certainly utilization can be carried on successfully without an intimate appreciation of all the problems of land management."

The Society must determine the criteria for admission into its organization of men trained in the schools and colleges of forestry. It may err in too fine hair-splitting respecting the admission of those in one or another of the various "*majors*" that have characterized undergraduate training. Merely weighing and measuring, insisting on so many hours of this and that, may cause the really essential points to be missed, and the Society to be the loser in active membership of desirable elements. On the other hand, it is fully recognized that forest management must not be lost to view, nor its component parts. Drastic action based on inflexible opinions may in the present stage of development result in weakening the Society in its breadth of view and effective purpose, and might indeed give rise to a number of organizations springing up prematurely. We need to advance on sound ground, but are we ready to draw lines sharply that will permit only those fully qualified in "*forest production*" to become Junior members of the Society?

R. C. BRYANT,
OVID BUTLER,
D. S. JEFFERS,
MYRON S. KRUEGER,
W. KYNOCH,
S. N. SPRING,
Chairman.

TEACHING OF PRE-FORESTRY SUBJECTS

THE Committee on Teaching of Pre-forestry Subjects was appointed late in the summer of 1935 by Dean S. T. Dana, Chairman, Division of Education. The Committee consists of the following members:

Prof. Joseph Kittredge, University of California

Prof. C. H. Guise, Cornell University

Prof. Karl W. Woodward, University of New Hampshire

Prof. H. P. Brown, New York State College of Forestry

Prof. Shirley W. Allen, University of Michigan

Prof. Henry Schmitz, University of Minnesota (Chairman).

In deciding on the personnel of the Committee, consideration is given to the fact that a considerable difference in point of view undoubtedly exists among forestry educators, concerning not only what the content of pre-forestry courses should be, but also how they should be taught. An attempt was made to have represented on the Committee these probable divergent points of view. It is impossible for the Committee to present a final report at this time. The study of the problem of pre-forestry courses is no less complicated than it is important. The time available has permitted making only a cursory survey of the general situation, and the following statement may be considered as a preliminary report of the progress made by the Committee. A final report will be prepared by the Committee for the 1937 meeting of the Society.

The particular task assigned the Committee was to attempt to determine: (1) whether pre-forestry courses are now so taught as to be of maximum value to prospective foresters, and if not, what changes are needed; and (2) whether these courses might be so reorganized as

to require less time than is now devoted to them, thus making it possible either to include a larger amount of forestry in the curriculum or to cover a wider range of non-forestry subjects than is now possible in most institutions.

The answer to the first question implies that the Committee is competent to decide or has specific information which in pre-forestry courses is of greatest value to prospective foresters. On the one hand the position may be taken that the maximum value of pre-forestry courses would be derived from a concentration on application of the subject matter of such courses to forest material, or problems with corresponding reduction in the time devoted to more general matters or to those fields other than forestry. This point of view appears to have some support in the Committee.

On the other hand the position may be taken that pre-forestry courses should contribute to a maximum development of mental power in the student, so that he may develop the ability to think logically independently, and originally on whatever problems may be presented to him in his professional career. This type of training need not necessarily involve specific application to forestry subject matter, and it is even possible that it may be obtained most effectively in subjects in which applications to forestry are not even considered. For example, courses in mathematics, logic, philosophy, economics, biometry, and others may contribute most to the training of forestry students if entirely devoid of all reference to forestry problems.

There does not seem to be any good reason, except perhaps the differences, if any, in the scholarly attainments of the instructors concerned, why actual courses in forestry should not contribute as much as pre-forestry courses to the student's

lectual development and in giving a "clear, conscious view of his own opinions and judgments, a truth in developing them, an eloquence in expressing them, and a force in urging them."

Fortunately the Committee is not concerned with comparisons of the relative merits of pre-forestry courses and technical forestry courses in the intellectual development of the student. It is interested only in the question of whether or not pre-forestry courses as now taught are making their greatest contributions to the education of forestry students. It is of greatest importance, however, that forest school faculties recognize clearly their responsibilities in this matter. It may be comforting, but not scholarly, for forestry educators to place the responsibility for any shortcomings of forestry education on the door of instructors of pre-forestry courses.

At this time it is impossible to make any recommendation concerning the content or where the emphasis should be placed in pre-forestry courses. The majority opinion of the Committee appears to be that emphasis in pre-forestry instruction should be placed on the fundamentals that contribute to mental power rather than an application to forest subject matter. On the other hand, there seems to be some legitimate criticism of the content of certain pre-forestry courses. For example, most, if not all, elementary courses in botany appear to overemphasize herbaceous or shrubby plants in illustrating the vital processes of plants, and to underemphasize the tree. This appears to be quite natural, because the data that have been accumulated to date were obtained in large part from shrubby or herbaceous plants, particularly agricultural plants, that lend themselves readily to observation. However, more data are available on the life processes of trees than are ordinarily included in the usual courses in botany. This change in emphasis will in no way detract from

the scientific or intellectual value of botanical courses, but may even strengthen and augment these values, not only for forestry students, but for all other students of botany as well.

Although the Committee is not ready to make final recommendations, there appears to be some evidence that the teaching of college mathematics might be somewhat modified, not to make this study less painful or arduous, but to save time and increase its educational value. The training of forestry students should include courses in college mathematics for at least two reasons. In the first place, it is believed that rigorous training in mathematics will increase the student's power of both inductive and deductive reasoning. Courses which may or do develop these powers are of special value in forestry training, because so many forestry courses place the greatest emphasis on memory and on the accumulation of factual material.

In the second place, the forester needs mathematics as a tool for his work in mensuration, surveying, timber physics, etc. There is a possibility that a course in unified mathematics may save the forestry student time and still give him sound, substantial mathematical training. Such a course should review the student's high school mathematics, especially algebra and trigonometry, and give him a working knowledge of analytical geometry and calculus. Exactly how much time might be saved by such an arrangement is not yet clear.

Probably the most legitimate and at the same time most serious indictment that can be made of the training of professional students is the inability of a large percentage of them to speak and write English of an acceptable standard. This problem is not peculiar to forestry education, or even to professional education. It appears that even graduates from the arts colleges are little better prepared in this subject than are the graduates of the

professional schools. The solution of the problem will probably be found, at least in part, in the high school, in the grade school, and in the home. The correct use of English can not be acquired overnight, and it can not be accomplished through legislation. Despite the fact that the cause of the difficulty may not be wholly or even in part in the forest schools, some remedial measures may be instituted within the forest schools to partly correct the situation. It lies within the power of every teacher to place emphasis on "form" as well as on subject matter in examinations, reports, and all other written work.

The second question assigned to the Committee for study, namely; whether pre-forestry courses might be so reorganized as to require less time than is now devoted to them, thus making it possible either to include a larger amount of forestry in the curriculum or to cover a wider range of non-forestry subjects than is now possible in most institutions, at least implies still another question, namely; whether or not the number of forestry courses might not be reduced in order to permit the introduction of additional non-forestry subjects, or to give the student more time for leisure, retrospection, and reflection. This question was not considered by the Committee, but it is nevertheless inextricably bound with the questions assigned it for consideration.

Two points of view are represented in the Committee. Some members of the Committee are of the opinion that, if it is possible in pre-forestry courses to concentrate more intensively on the fundamentals and thereby save time, the time so saved should be used to enable the student to cover a wider range of non-forestry subjects. It does not necessarily follow however, that this wider range of non-forestry subjects involves an addi-

tional number of elementary courses subjects now included in the curriculum. It may be far more desirable to permit the student to pursue further a limited group of subjects in order that we may follow through a few subjects to more advanced consideration, which ordinarily involves a higher type of intellectual training.

On the other hand, certain members of the Committee feel that any time gained might best be used by increasing the number of forestry courses, or at least broadening courses in forestry already offered by the forest schools.

It seems necessary to emphasize this fact, although unfortunately it is not always recognized by forestry educators that the subject-matter dealt with in forestry courses *may* have just as high educational and cultural value as pre-forestry courses taught in other departments of the university. If the scientific and intellectual pabulum of forestry courses is weak and unchallenging, the forestry courses on the whole will turn out weak graduates despite all efforts of the teachers of pre-forestry courses. On the other hand, our forestry teaching is of highest order, it may overcome many of such shortcomings as may exist in pre-forestry instruction as at present offered. The problem of graduating well-trained, balanced, clear-thinking graduates is in a large measure ours. The responsibility is inescapable. Forestry educators must be ready to accept it.

Your Committee is not yet ready to make any recommendations regarding pre-forestry courses. During the coming year a detailed study of pre-forestry courses included in the curricula of American forest schools will be made. A final report based on this study will be submitted at the 1937 meeting of The Society.

THE PLACE OF RANGER SCHOOLS IN FOREST EDUCATION

LAST summer the Executive Committee of the Division of Education of the Society of American Foresters asked me to act as chairman of a committee to consider "The Place of the Ranger Schools in our Forest Education." After some consultation and correspondence, the following committee was formed. Prof. James F. Dubuar of the New York State Ranger School at Wanakena, N. Y.

Mr. E. B. Hurst, forester for the Consolidated Power and Paper Company of Wisconsin Rapids, Wis.

Mr. Peter Keplinger of the U. S. Forest Service, Washington, D. C.

It was fortunate that the chairman was able to confer with two other members of the committee in addition to carrying on the correspondence.

In order to carry out the wishes of the Executive Committee it became the duty of this committee to determine:

1. Are there opportunities for useful service by ranger schools in this country?
2. Can the work done by the ranger school graduates be more advantageously done by graduates of professional schools?
3. Can certain kinds of work be done by the semiprofessional forester equally well or better?
4. If the latter is true, what is and what will be the demand for men with such training?
5. Are we training enough such men?
6. If additional schools are established, should they be independent institutions, or in conjunction with existing schools of forestry?

The first question that needs to be discussed is the term Ranger School. Is that exactly what we mean? When we speak of ranger schools we think of institutions that train men to become forest rangers.

Ranger school has been generally applied to all of our secondary education in forestry. We came by this term very naturally, for many of the students in the short courses conducted, in the past, by various forest schools were attended by men who had been employed as rangers on the National Forests, or by those hoping to be able to pass the examination for Assistant Forest Ranger. But since we are now filling the grade of Ranger with men with technical training, the term Ranger School has lost its meaning and does not convey the idea we have in mind. The committee feels that the term Semiprofessional School is more appropriate. What we want is a type of training that will fit men for secondary work in all phases of forestry. We have accordingly dropped the idea of training for one grade of service, and are thinking in terms of general training of a secondary nature.

The opportunities for useful service of semiprofessional schools in forestry will be largely determined by the demand for men with this type of training. To find out if men trained along semiprofessional lines would be employed if they were available, we sent a questionnaire to representative lumber manufacturing concerns, paper manufacturers, consulting foresters, large land holding companies, State Foresters, and Forest Supervisors in the Lake States Region.

We placed this matter before them in definite terms as follows: "It is proposed to offer young men from your own community, who have a high school education, one year of intensive practical training in forestry, under woods conditions, along the following lines:

Surveying, map making, timber estimating, marking timber for cutting, scaling, logging methods, fire protection, tree identification, wood identification, nursery

practice, grazing land management, book-keeping, and typewriting.

If such men were available, would you consider employing them as needed to fill such openings as camp clerks, timekeepers, scalers, assistants to logging superintendents, compassmen for your cruisers, timber markers, sub-foreman on large jobs, assistants to your purchasing agent, property clerks, nursery foreman and helpers, game refuge attendants, and general forestry work under supervision?"

The general reply was in the affirmative, with some making qualifying statements. Generally speaking, the idea was well received. Some even expressed sincere gratitude that some thought was being given to training men for this sort of work.

It was also generally indicated that they would be willing to advance these men as they proved their worth. The average minimum salary suggested was \$60 per month, while the average maximum was \$150 per month. It seems reasonable that everyone directly connected with active field work in any phase of forestry must know of several young men in their employ who would be of much more value to them if they could avail themselves of semiprofessional training, and to whom a college education is an impossibility.

Some seem to feel that there will be a very great need for semiprofessional forest workers, and that they will eventually be put on a year-long basis and given civil service standing, but because we cannot exactly foresee the type of training needed nothing should be done about it at present.

We are going to have a good many men who, having completed their enrollments in the C.C.C. camps and having gotten a taste of forestry, would like to get additional training in order to better themselves and stay in forestry. The semiprofessional school is the only one open to such men, for they do not have

the basic training to enter a professional school. Some of them are even wise enough to realize their limitations, and would not take full professional training. If we do not provide semiprofessional training for these men, their usefulness in forestry will be greatly reduced, if not entirely lost.

How the graduates of one of our going semiprofessional schools are employed will throw added light upon the subject. A tabulation of the graduates for the past five years has been made. We find 6 per cent in public employ, 6 per cent in private employ, 9 per cent have attended full professional schools subsequent to their work in a semiprofessional school, and 22 per cent are miscellaneous employed. Only four of the 179 graduates of the last five years are not employed.

It is fully realized that the last five years are not typical as to classes of employment. In normal times many more would have been employed in private enterprise. In fact we have had just a reversal of the percentage in public and private employment.

The question naturally arises, can the work done by the semiprofessional school graduate be more advantageously done by graduates of professional schools?

Some have the feeling that secondary positions could be best filled by those who have graduated from schools which are not on the approved list as presented in the recent investigation by Professor Chapman, but these men have a degree and have in most cases spent four years and considerable money to get it. Is it reasonable to suppose they will be satisfied to remain in secondary grade of employment? It is certain that they did not start out with that in mind, and if they are forced into it because of inadequate training, they certainly will not be classed with the satisfied and enthusiastic employees. Why require a man to get what amounts to semiprofessional training at a school that takes four years to do it and

up certain entrance requirements which would prevent many men from entering who only want semiprofessional training? Furthermore many men of this class, by experience and environment, are much better qualified to benefit by semiprofessional training, and would fill secondary positions in forestry more satisfactorily, than a man who has graduated from a four-year course which is of doubtful professional grade. Social differences between the man with four years of training and the man who only wants semiprofessional training will augment against the former and favor the latter in secondary positions in forestry.

Some have thought that the secondary places in forestry should be filled by men with full professional training from approved schools during their probation period. It is admitted that a limited amount of this would be beneficial to all concerned, but to pursue this as an established policy would result in confusion and added expense, and endless worry to the supervising personnel. It simply means that these men will be constantly sifted and green men will replace men who have just gotten to the place where they are really earning their salary. The general operation of the forest business would be in a constant state of confusion and highly inefficient.

It seems logical to assume that work in a secondary grade should be as carefully and efficiently done as any other work. It seems an equally valid argument that you would get this kind of work done by men who know that they are going to be obliged to depend on such work for their living for many years to come. With semiprofessional training and experience, the quantity and quality of their work should attain a high standard and remain there, and they would take a pride in keeping it up to that standard.

Much of the necessary routine work on any kind of a forestry project could

be done by men with training of the semiprofessional grade; while the man with full professional training would become dissatisfied and would feel that he was not getting along as fast as his training would lead him to believe he should.

In many cases the semiprofessionally trained man will have employment as soon as he finishes his training. He may have been sent to school by his employer, or he may have taken leave of his own volition in order to take the training offered. That men would avail themselves of this kind of training can be attested to by every school which operates a summer camp. Men apply for admission and frankly state that they want only the camp training, but when you have set up certain requirements for entrance to camp, you have to refuse these men. What they are really looking for is semiprofessional training.

There is a feeling that industry would consider that it had all the advice in forestry necessary by hiring a man with semiprofessional training, thus actually replacing a full-fledged forester. That hardly seems likely. They would know to begin with that his training was limited. If management plans or other technical work were desired, it would be necessary to employ a forester with full professional training or call in a consulting forester. After the plans had been made, it is well within reason that they would hire semiprofessionally trained men to carry out the plans and see to it that the methods of cutting and logging were adhered to.

A railroad company would not hire a road master to locate and construct a railroad. They would hire an engineer, but it is conceivable that once the road was constructed many road masters would be hired to keep it in operation. The lumber company building a high-grade sawmill would hire an engineering company to draw the plans and build the mill, but when the mill was up, competent

millwrights would be hired to keep that mill producing lumber. You employ a physician when you are ill, but the nurse carries out the orders of the physician. Few would think they had cared for the sick by employing only a nurse, but the nurse is important to make the doctor's advice effective.

What we want to emphasize is that the semiprofessional man is a needed supplement to the work of the fully trained forester, and that he in no way replaces him, the more foresters we have, the more semiprofessionally trained men we need. Practical working plans need proper field supervision.

No general set of rules can be applied to all forest properties in the making of management plans. Each area must be considered in the light of the peculiar circumstances affecting it. Therefore, one professionally trained forester might make several plans for one company, but many semiprofessional men will be required to carry out these plans.

Some have contended that the semiprofessional training only trains for the present day conditions, but semiprofessional training is bound to be very much concerned with the basic fundamentals. Therefore, it hardly seems possible that such training is going to become quickly *passé*. Changes are bound to occur at the top and are less likely at the bottom. Therefore, it is the man with full professional training that must deal with changing conditions and solve new problems, while the semiprofessionally trained will simply carry out the details of the revised plan.

The unanimous opinion of your committee is that the training should be regional. Employers of these men will feel that their training has been of the kind that will make it possible for them to

quickly adjust themselves to the work of the hand. Since they have lived in this region, it is safe to assume that they will be contented, all of which adds to the desirability.

If we are to have schools of this type, who is going to control them? Or should they be operated as independent units? Considering all the possibilities it seems most advisable that every semiprofessional school should be a part of, and directly controlled by, an established forestry school of high standing. Such control would insure high standards of instruction and would keep the scope of instruction in the proper field. If such schools were allowed to operate as independent units, it would not be long before they would be attempting to give professional degrees. Then, instead of serving a useful purpose in a highly neglected field, they would simply lower the average of full professional training.

"With the wide range of the field in forestry, it is hard to believe that positions above the grade of laborer could be filled to the best advantage by semiprofessional foresters. Neither is it to be expected that the salaries of many of these positions will be sufficient to attract those who have a professional education, although these salaries are large enough to influence young men to obtain semiprofessional training in order to qualify for them."

From the experience we have had in this country coupled with the experience abroad, it would seem that the best interests of forestry and the profession will be met if we recognize some positions of professional and some below professional grade, each to be filled by men with the training belonging to the respective grades.

ROBERT CRAIG, JR., *Chairman*

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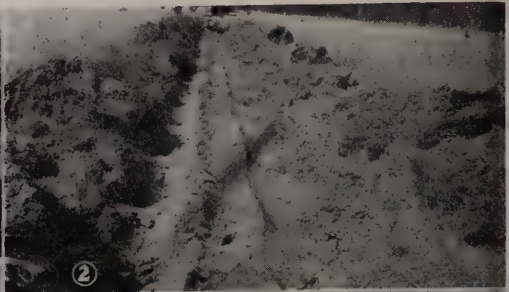
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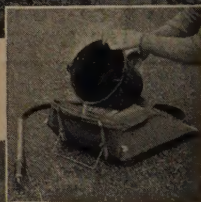
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